AMERICAN GAS ASSOCIATION MONTHLY

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Come to Chicago

CONTENTS

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Let us
Promptly agree
Among ourselves
As to what
The Gas Industry needs;
Then,
As one man,
With our shoulder
To the wheel,
Let's get it.
It can be done.

WE began the year with the determination to agree among ourselves as to what the gas industry needed and then, as one man, to get it. In all essential particulars, the members of the American Gas Association have agreed. In the effort to advance and improve the condition of the gas industry, they have—as one man—put their shoulders to the wheel and their enthusiasm into the task and the gas industry has moved forward under the force of united effort and with the incentive of high purpose. We will meet in Chicago not so much to review what has been done, as to blaze the trail for further progress. To you loyal A. G. A. men who have made the Association the strongest factor and the acknowledged leader in the development of the industry, I express my warmest gratitude and appreciation for the unstinted support and encouragement that has been given to our efforts. To those —both gas companies and individuals— who have yet to become members, I say that no more worthy cause commands your support and interest than the upbuilding of the profession of which you are a part through the National Association which is so efficiently accomplishing that object.

The gas industry is in the front rank of the nation's essential enterprises. Let your presence at the Chicago Convention show your faith and determination to make for it an even higner place. Let us go forward together!

Charles F. Hemming

PRESIDENT

AMERICAN GAS ASSOCIATION MONTHLY

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A Bill Payable in Human Life

MELVILLE W. MIX, In The Nations Business

ABOUT eight years ago a handful of men got together at Milwaukee and organized what they then called the National Council for Industrial Safety "to promote the conservation of human life and its incidents in the industries of the Nation." The growth of this little organization to the National Safety Council of to-day is proof of the fact that there are in this Nation's business such things as true co-operation and self-sacrifice, for only such spirit could have made possible the growth of a non-commercial association devoted to accident prevention and industrial health work from a membership of 14 in 1913 to a council of some 4,000 employers who operate more than 8,000 factories, mines, railroads, public utilities, and other industrial enterprises and employ more than 7,000,000 workers.

Industry is fast learning the cost of carelessness and that the cheapening of life is a most expensive thing.

The movement, born and developed in America, is now spreading to every other country on the globe. England, France, Belgium, Norway, Sweden, Japan, China, Australia, Palestine and even South Africa have asked and secured America's help in organizing industrial and public-safety movements.

As far back as 1893 the subsidary companies of the United States Steel Corporation employed safety inspectors and utilized what crude safety devices were then known. In 1904 the steel corporation issued the first safety rule book published in America and two years later the first standard safety device book. But it was not until 1906, when Steel Corporation's plants met for that purpose, that an attempt at an exchange of information and ideas regarding accident

prevention was made. Two years later the first central safety committee was organized among the executives of the steel corporation and the first intensive investigation into the causes of accidents was undertaken.

Then came twelve years of discovery for the men engaged in organized accident prevention work. The Steel Corporation, the Chicago and North Western Railway, the International Harvester Company, and the other pioneers in safety work got together first to exchange ideas, and finally to organize a clearing house which would bring all the available information on accident prevention to their fellow employers and competitors alike. The pioneers in the movement, far from looking upon such information as a valuable trade secret, shouted each discovery to the world.

What were some of the discoveries?

First, that accidents can be prevented. Eleven years ago the pioneers in railroad safety work were told "it cannot be done" and to-day an analysis of railroad accident statistics made by the National Safety Council discloses the fact that in ten years 37,000 lives have been saved by safety work on the railroads of the country. And railroad safety men say, "We are just scratching the surface. The next ten years will show a 50 per cent improvement over the record of the last ten years."

The discovery that accidents can be prevented brought a flood of legislation requiring the guarding of this, that, and the other thing and for a while employers felt that when all the belts, guards, setscrews and the casualty managers of all the United States flywheel pits in their shops had been guarded their safety work was done. But they were soon disillusioned, for accidents continued—true, not in such great numbers.

The second discovery was more remarkable and, unbelievable as it may seem to-day, was a great surprise to the industrial executives of ten and fifteen years ago. It was the discovery that the great majority of accidents are caused, not by unguarded belts and gears, but by carelessness or ignorance of workmen and their supervisors—the discovery that mechanical guarding can be relied on to prevent only a third or a fourth of the total number of accidents and that for the prevention of the remaining two-thirds or three-fourths we must rely on education, training, and supervision.

Then came a third discovery, that safety work is not only humanitarian but good business. No one man claims credit for this discovery. It is something that every employer who puts in an efficient safety department realizes in his own way. This is how one of the pioneers of the movement says the realization came to him.

"One of our best workmen had been killed by the explosion of a high-speed emery wheel. A large piece of the wheel struck him in the chest and killed him outright. A simple guard that we might have made in our own shop at a cost of five dollars, would have prevented the accident. The death of this workman cost the company $4,000 and left a widow and three children who promised to become public wards because of the inability of the mother to hold the family together. This accident haunted my mind for months—not only the hideous

injustice done the mother and children, but the utter stupidity of the thing from the standpoint of cold-blooded business efficiency. That inquest marked the beginning of my interest in safety and was one of the things which finally aroused my employer to organize safety."

When the safety director of the International Harvester Company rushed into the office of the manager of their steel plant one day and said that he had just been over at the Illinois Steel Company and had learned that in their first two years of organized safety work they had reduced deaths and serious injuries 65 per cent, his chief replied, "It can't be done. I don't believe it." And when the safety director insisted on telling just how the steel company was bringing about this reduction, his chief sent men to make three independent investigations. He found that what his safety director had said was true and immediately followed suit, with these results in the first twelve months:

Deaths were reduced from 4 to 1.

Serious injuries were reduced from 59 to 28.

Lost time was reduced from 92,000 hours to 49,000 hours.

And the saving in two years paid for the entire safety equipment costing $46,000. Employers everywhere found that—crude as the safety work of those days was—it not only paid its own way by reducing lost time and labor turnover, but cut down compensation costs, insurance costs, and hospital bills.

Another giant stride toward the elimination of accidents was the fourth adventure, the discovery that "engineering revision"—the redesigning of machines or manufacturing processes—would eliminate exposure to accidents. Safety men realize that, while it is well to put a guard on a dangerous machine or to teach the operator to be careful it is better to eliminate the dangerous element of the machine. They realized, for instance, that while a punch-press guard may greatly reduce the number of fingers and hands cut off by the press, engineering revision—which, in this case, might mean merely the installation of an automatic feeding device or an automatic kick out—would make it unnecessary or impossible for the workman to get his hands under the plunger.

Engineering revision opened up still new and vast accident prevention possibilities which have been utilized by thousands of progressive manufacturers and it led to the fifth great adventure in accident prevention—discovery of the fact that accident prevention increases production. When manufacturers who use punch presses by the thousands equipped these machines with automatic feed devices—as a rule, simple homemade affairs—they had in mind only saving the punch-press operators' hand and fingers, but they found that in addition they had made it possible for the operator to turn out ten to 50 per cent more work. And so throughout industry safety men began to find that what had been considered merely as accident prevention was really an efficiency device. This was one of the most fortunate discoveries of all, for it did a great deal to break down the workman's opposition to safety devices— an opposition based on the mistaken theory that the safety device or revised process would interfere with

his work or that it would cut down his output and thereby his wages.

When the United States entered the war safety came into its own. Then as never before did the cry go out for maximum production and minimum labor turnover. All sorts of experiments were tried and many varieties of research in industrial management conducted. Then it was that the companies which had enjoyed well-organized safety departments for years before the war found themselves in a much more advantageous position than their fellow employers. It was during the war that manufacturers realized that safety work offered the first common ground on which employer and employee could meet without possibility of controversy and with inevitable profit to both. In fact, in many of the big industries the most effective industrial management organizations were built up on the foundation laid by the safety department. The employer who, by making his plant a safe and pleasant place in which to work, had demonstrated to his men that he was interested in them as human beings did not not find it difficult to put in improvements in labor management. He already had his workmen's committees, his training schools for foremen and his mediums of contact between management and men.

By this time accident prevention work had become pretty well specialized; some of the best engineers of the country had been attracted to the field; and definite plans for installing and operating a safety department in any sort of an industrial organization had been developed and thoroughly demonstrated. Posters, prepared at the headquarters of the Council and distributed weekly to its members, began to appear regularly on plant bulletin boards. The Council began to distribute Safe Practices pamphlets—symposiums of the actual experiences of the companies which were doing the most successful safety work. Moving pictures, plant publications, and other means of bringing safety propaganda to the workmen were developed.

Then came the realization that the accident experience of a plant depends not entirely on the workmen, but more largely on the foremen and the management. Employers discovered that to most workmen the foreman represents the management; they began to realize that unless the foremen are really won over to the safety movement the workmen never would be. Safety men, themselves, began to realize that until the management of the plant was whole-heartedly behind safety work—not merely in the matter of supplying funds, but in respect to personal interest as well—superintendents and foremen never would be.

Safety men began to discuss "How to sell safety to the big boss." Some said it could be sold best on the basis of economic considerations, others, on humanitarian considerations. Both were right. The fact is that in the last five years the executives of American industry have become thoroughly convinced of the value of organized accident prevention, some because of the dollar-and-cents possibilities, others because they hated to see their men killed or injured.

Even to-day discoveries are being made in the science of accident prevention. Within the last year, for instance, there has been enunciated the principle that *every accident is the symptom of an inefficiency;* that everything which is really

efficient is safe; and that every machine or process which is really safe is efficient. The truth of this theory has been demonstrated in actual practice by E. I. du Pont de Nemours & Company, the National Lead Company, and other members of the National Safety Council.

The story of the safety movement in America is a story of the success of cooperation where coercion had failed. A decade ago very little was being done to prevent accidents. That little was done reluctantly. And the reluctance was to a great extent due to prosecution by state labor authorities. Because of the policy of using the club and star, then universal among factory inspectors, there was no cooperation between employers and governmental agencies. The belligerent attitude of inspectors had the effect of discouraging employers and leaving a bad taste in their mouths, a taste which remains to this day in some states.

Contrast with that the conditions of to-day which make possible a happy family of 8,000 men and women—factory managers, city, state and federal officials, educators, and civic, commercial and industrial leaders—all working together on a cooperative basis for the prevention of accidents on their own properties, in the other fellow's plants, and in the country at large. Picture policemen mixing with truck drivers for the prevention of traffic accidents; picture school teachers meeting with business men in the interest of educating the child to avoid accidents; picture state factory inspectors and factory owners in an amiable conversation; picture employer and employee getting their feet under the table to talk over reduction in injuries, lost time, and other forms of industrial waste. Picture these things, then you have some idea of what the safety movement has done to American industry.

Rosy as this picture is, however, it includes not more than 25 per cent of American industry. Seventy-five per cent—the employers of twenty million workers—have yet to see the light.

"It is the Industry's Fight"

"THE American Gas Association has come into its own..... It is of the utmost practical assistance to its company members who are in need of information as well as oral testimony in cases which are of vital importance to the industry. This feature of the Association's service should be given as much publicity as possible."

The foregoing expression of appreciation of one of the features of the Association's service comes from one of our company members which has been fighting for the cause of reasonable and economic heat value standards.

Accident Prevention In Gas Works Operation

JOHN J. O'CONNOR

Secretary, Public Utilities Section, National Safety Council.

THE great advantages derived financially to the gas industry are money saved to the gas company from the lessened amount of damages paid for accidents in the year's operation, wages paid while men are off convalescing, and the saving of time and money by keeping men at their regular work and not having to train new men to take the place of valued employes.

To the working man there comes beneficial results if he co-operates and is careful in that his earning power is kept at the maximum. In case of accident, the man and his family suffer, for the wheels of industry turn relentlessly on.

The various operations in a gas works are classified as follows for accident prevention:

Handling Generator Fuel, Boiler Fuel and Oil

1. All vehicles used for conveying coke and coal should be kept in first-class condition.
2. All coke forks, picks, shovels, and bars should be kept in repair and placed in racks after the shifts have finished.
3. All elevators and conveyors to be regularly inspected and properly screened and guarded.
4. Storage yards to be kept clean and free of objects that would cause tripping or falling.
5. All manholes and valve pits to be properly covered, and where open pits are in storage yards they are to be barricaded.
6. Oil wells or tanks to be kept sufficient distance from generator house to avoid sparks or excessive heat.
7. Tar and oil settling wells and tanks should have a steam connection at their tops, so that in case of fire steam could be used to prevent continued combustion.
8. On windy days, men handling coke or coal should wear goggles.
9. Coke and coal pile overhangs should never be allowed to form, and if formed in cold weather should be broken down at once.

Generator House Gas Generator Sets

1. The installation of hydraulically operated valves on gas generators is recommended to insure the proper sequence of valve operation.
2. Proper provision for explosion ports on all blast lines to the generator, carburetor, and superheater, as well as safety gates at the blower.
3. Vents should be placed on fire side and air side of generator blast valve for immediate detection of leakage. Vents should be placed on carburetor and superheater blast lines. When machine is down for repairs, main blast, carburetor, and superheater valves should be examined and overhauled.
4. When machine is down for recheckering, special care must be taken to close and lock take-off gas valve. Carburetor and superheater should be thoroughly purged out with steam and air and cooled down to normal before men are allowed to enter same.
5. Necessary precautions taken to see that wash-boxes are thoroughly purged of gas when cleaning, and gas valve shut off and locked.
6. Care taken to see that cleaning doors are closed before charging after cleaning.

Generator House Floor

1. Plenty of light, either gas or electric, to insure good vision about the operating tables and charging doors.

2. Special attention to ventilation and provision made for plenty of air so that foul or explosive gases will not hang at top of generator house.
3. Keep floor swept on each shift and free from pieces of equipment, iron pipe, etc., that men might fall or trip over.
4. Protruding or overhanging articles should never be allowed to remain in place. When imperative to do so, temporary guards should be placed around same until they are removed or construction finished, so men will not walk into or under them.

Generator House Basement

1. All stokers cleaning fires, handling heavy iron bars and clinkers should wear heavy leather mits to avoid cuts and burns.
2. Clinkers should never be wet down or hot coals wet down while men are standing close to cleaning doors to avoid blinding or burning with steam.
3. Housekeeping conditions need careful attention. All stoking tools should be piled in racks, materials for generator repairs piled neatly, and floors kept clean.
4. Clinkers and ashes should be removed as promptly as possible, and should always be kept out of pathways between generators where men would trip and fall on same.
5. There should be plenty of light between generators and around cleaning doors so that men can see what they are doing.

Engine, Exhauster and Pump Rooms

1. Gas leaks and steam leaks of any nature whatsoever should be immediately repaired.
2. Good ventilation should be arranged for so that there will be no opportunity for gas pockets to form in the basement or over head.
3. Oil and waste should be contained in closed cans.
4. Only electric lights should be used and should be enclosed in vapor proof bulbs.
5. Electric switchboards should be enclosed and rubber mats placed in front of same for men to stand on.
6. Flywheels, belts, and moving parts of machinery should be enclosed with guards.

Purifying House

1. Constant supervision for gas leaks is necessary.
2. No exposure of matches or any inflammable material should be tolerated.
3. When repair work is to be done, men should always work in pairs or more.
4. Should the seal of a purifying box be broken, men should never enter purifying house until same is thoroughly aired.
5. A seal pot or box should be installed, with a vent to the roof if the house is enclosed. Then the seal pot would blow in case of increased pressure, instead of the box.
6. Where possible, the valves for refilling water seals should be on the outside of the purifying house.
7. Electric lights should be enclosed in vapor proof globes, and where possible a duplicate system of lights installed.
8. When dumping and refilling a purifying box, inlet and outlet valves must be closed and locked. In lifting the lid, men should be relieved at short intervals so as not to inhale too much gas.
9. Enough time should be allowed after lid is lifted and moved aside so that the open box can be aired. Men working in the open box should be watched so that they will not be overcome.

Hot Scrubbers, Shavings Scrubbers and Condensers

1. When shut down for cleaning for repairs, inlet and outlet valves must be inspected and properly closed.
2. When cleaning, repairing, or refilling any of the above apparatus, two or more men should work together so that if one were overcome with gas or fumes, alarm could be given.
3. Matches or any inflammable material should not be exposed near or in this apparatus when open.

Machine, Carpenter or Blacksmith Shops

1. Protection from all moving machinery and belts should be made by enclosing guards.
2. Housekeeping conditions need special emphasis in these shops as men eat lunches, change clothes, and use them as hangouts at lunch hour and before and after working hours.
3. Shut down all moving machinery before oiling or cleaning and when operators leave same.
4. Men engaged in grinding or chipping metal should wear goggles.
5. Broken hand tools or damaged ladders should be scrapped and thrown out.

Boiler Room

1. When boiler goes down for repairs, header and non-return valves should be inspected and repaired to close properly
2. Boiler washer should never go into boiler without notifying fireman and making sure blow-down valve is securely closed and locked.
3. All gauge glasses and steam gauges should be kept clean and tested regularly to insure proper working.
4. Stoker gears should be properly enclosed.
5. Housekeeping conditions should be carefully watched. tools kept in racks, floors swept and kept clean, ashes kept in neat piles and removed as soon as possible.

Gas Relief and Storage Holders

1. All railings, stairways, and walks should be kept in constant repair.
2. Holders should be equipped with a maximum height steam whistle to prevent holders blowing and danger from escaping gas.
3. Holder inspections and repairs to be made by men accustomed to this work and only at the direction of proper authority.

It is not the intention to lay down rules of operation, as no two plants can be operated exactly alike. Equipment that larger concerns put in, having excellent safety features, would work financial hardship on smaller gas works.

When an accident happens the physician should be called at once, or the patient sent to him, if it be a walking case, to determine the seriousness of the injury. In case of asphyxiation by gas, or an electric shock, the prone pressure system of resuscitation should be administered until the doctor arrives.

The fundamental principles underlying successful accident prevention work are:

1. There must be a spirit of interest, willingness and co-operation shown by all executives down to and including the foreman.
2. All dangerous practices of whatsoever nature should be abolished at once.
3. Plant housekeeping and cleanliness form the means of avoiding many accidents, make men careful and executives watchful.
4. Workmen should be so interested by the management that they willingly take the initiative in accident prevention work.

Get Behind Local Safety Councils—It Pays

From the Accident Prevention Committee, CHARLES B. SCOTT, Chairman

MORE and more all the time it is becoming recognized that prevention of accidents of a public character is, in a large sense, a community problem. Because of this realization, the National Safety Council now has twenty-two safety councils in the larger cities of the country, operating on what is known as the "paid staff" plan; it also has nineteen additional safety councils which are conducted on the "voluntary service" plan. It is the "paid staff" plan, in particular, that we wish to discuss at this time. Such safety councils in the main, are closely affiliated with the local Chamber of Commerce and in every case function as the local representative of the National Safety Council.

These organizations are designed to perform an intensive, individual service in a local way in much the same manner that the National Safety Council provided a national, mail service to the entire country. Their activities are conducted on the committee basis through the homes, schools, churches, industries, public utilities and railroads in such wise as to be representative of every business interest and every phase of life in the community. Those of us who have had any experience in public relations will readily appreciate the merit of this arrangement. It provides, in short, the same character of safety organization for the community it serves, that has achieved such constructive results in accident prevention in industry, with public utilities and on electric and steam railroads.

Such safety councils carry on continuous, year 'round operations for the prevention of accidents and fires, doing consistant work in an intelligent, business-like manner, performing a service of real worth to the entire city. These activities are not only humanitarian. They have great economic value and represent a direct pecuniary saving to all companies confronted with an accident or fire hazard, for—once a safety council gets well under way—the whole community it serves is aroused to the necessity for exercising care and caution under all circumstances, thus minimizing the wastage of accidents and fires.

Because of the civic character of such institutions they are able to accomplish a great deal more in public accident prevention than street railroads or public utilities can hope to do by direct methods. This comment is not intended in the least to detract from the importance of company activities undertaken with a view to reducing public accident; but it must be recognized that—no matter how unfair or unfounded the attitude may be—the public in many cases assumes that the utilities engage in such activities as a means of saving money, increasing public favor or for some other ulterior motive; whereas the safety council, being non-commercial and non-political, and having no claims to pay for injuries and damages, cannot be so charged.

Such institutions as a rule succeed in having Safety and Fire Prevention taught in the local school systems. The worth of this arrangement is inestimable

from either the standpoint of public or employe accident prevention. In nearly every instance they conduct evening schools or meetings at which instruction is given to industrial employes, such as managers, superintendents, foremen, safety supervisors, chauffeurs, the plan being developed along thoroughly practical lines.

These safety councils require finance with which to conduct their operations, meet payroll expense, printing, equipment and the miscellaneous expense which is necessarily incurred. Their budgets range from $10,000 to $50,000 per year. The effectiveness of their operation is, quite naturally, limited by the scope of the activities in which their financial status permits them to engage. Company members of the American Gas Association, situated in cities fortunate enough to have safety councils, are urged to get behind local safety councils actively, morally and financially. It pays. It is good business. The writer regards such local safety councils as absolutely the best possible means of preventing public accidents as applied to the utilities industry. You and your company will get out of the support of such organizations a great deal more than you put into them. These returns will be in the shape of fewer deaths and injuries and less property damage; reduced claim expense, better operations, increased efficiency and improved public relations. Every argument favors such support—and there are none against it.

—o—O—o—

The Need for Trained Engineers in the Gas Business

THE A. G. A. Committee on Cooperation with Educational Institutions was appointed early this year with a realization that some steps must be taken to ensure to the gas industry its necessary quota of men technically trained and with specific knowledge of the many problems of gas manufacture, distribution and utilization.

The Committee has been in conference with educators of leading colleges and universities having in mind the following plans,—

To bring to the attention of college students the attractive field for useful service and accomplishment which the gas business offers, and

To devise ways and means whereby opportunity may be offered in the various educational institutions for such interested students, by study and research, to make them conversant with the technique of gas engineering so that, upon graduation, they would be immediately available and useful to fill the need for trained gas engineers.

The July 25th issue of *The Gas Age* contains a leading article descriptive of the University of Michigan Gas Course, by J. Gerald Ames of Springfield, Ill. This article thoroughly analyses the need of the gas industry for properly trained men and tells in detail the extent to which the University of Michigan is meeting such a need.

We commend to every gas man the reading of this article for it shows that very few universities in this country have in their curricula courses especially adapted for gas engineers and emphasizes the need of some intensive effort upon the part of the gas industry to secure the establishment in other universities of gas engineering courses.

Resuscitation

Reprinted from the *Bureau of Safety* Bulletin and with the permission of Dr. Charles A. Lauffer, Medical Director of the Westinghouse Electric & Manufacturing Company.

VARIOUS methods of restoring life in persons apparently dead have been practiced from time immemorial. The Sylvester-Laborde method of artificial respiration was largely in vogue until superseded by the Schaefer or Prone Pressure Method. This method is easy to learn, and can be successfully employed by one man. "Prone Pressure" utilizes the organs below the diaphragm to elevate the diaphragm, thus emptying the lungs; it cannot lacerate lung tissue and is the best substitute for natural breathing yet devised. By spirometer methods for the accurate determination of the volume of air removed, the old Sylvester-Laborde method is reported to have an efficiency of 175 cc. of air volume expired, against 520 cc. of air expelled by the Schaefer method. Making pressure twelve times a minute by the Prone Pressure Method gives us 6240 cc. of air expired, and a like amount inspired, affording more volume of air per minute than in normal breathing. Numerous successful results attest its practicability; those who have had occasion to use the Prone Pressure Method believe in it.

The diaphragm is an arched muscular partition. Its convex surface is the floor of the chest; the chest contains the heart and lungs. Its concave surface is the roof of the abdomen; the abdomen contains the stomach, spleen, liver, kidneys, intestines, pancreas, etc.

The diaphragm rises and falls like a piston rod in its cylinder; when the diaphragm rises, the air in the lungs is expired, and when the diaphragm descends, atmospheric air rushes in through the nose and mouth to inflate the lungs. Filling the lungs is inspiration, emptying them is expiration.

The normal lungs are unattached to the chest walls; only their blood vessels and the bronchi give them support. When empty the lungs are partly collapsed, but when filled with air they are expanded to occupy the cavities designed for them.

The lungs are passive in respiration; using the lungs of a cat in the familiar bell-jar experiment and employing a sheet of rubber dam to represent the diaphragm, it is self-evident that the natural mode of inflating and emptying the lungs is by the activity of the diaphragm.

The diaphragm begins its activity at birth, and its cessation means death. The diaphragm is as necessary to life as the heart; the continuous rhythmic contractions of both muscles are necessary to continuous life.

A man can fast 40 days or more if water is plentifully supplied him; but if his diaphragm is paralyzed for three minutes thus depriving him of air, he may perish. A man requires oxygen, of which the air contains 20 per cent, and he must eliminate carbon dioxide gas, the retention of which will itself paralyze his diaphragm.

From whatever cause his diaphragm is paralyzed, it is self-evident that if the man's life is to be saved, artificial respiration must be employed until his disturbed nerve centers recover their normal functions; that is, until he is able to breathe for himself.

When the diaphragm is paralyzed, the man stops breathing, the heart action becomes feeble and irregular, and there is unconsciousness. This condition of suspended animation can arise from several causes:

1. Electric Shock—By its action on the nervous system, the passage of an electric current may arrest the action of the diaphragm.

2. Asphyxiation—There are 40 or more non-respirable gases, which, upon entering the lungs, paralyze the respiratory center in the brain (medulla); exclusion of air as in a closed vault, or in drowning, produces asphyxia, due to the lack of O_2 and the retention of CO_2. Certain drugs, as opium, in a similar manner arrest the action of the diaphragm. Chloroform and ether may act in this manner.

3. Traumatic Shock—A blow on the head, jaw or neck, or over the solar plexus, will paralyze the diaphragm. A man who gets such a knock-out blow must be made to breathe until his disturbed nerve centers recover their normal functions.

Rules

The Prone Pressure Method may be conveniently reduced to five rules, and described in brief under these headings:

The Position of the Patient

The patient is laid on his stomach, face turned to one side, so that the mouth and nose do not touch the ground. The patient's arms are drawn away from his body, or extended above his head.

The patient's mouth is cleansed of mucous, blood, serum, tobacco, chewing gum, false teeth, by a stroke of the finger. This prone position causes the tongue to fall forward of its own weight, as well as facilitates the removal of liquids from the mouth and air passages by gravity. It is this fact that makes it possible for one man, alone and unassisted, to save the life of a comrade in drowning, electric shock, or other condition requiring artificial respiration.

The Position of the Operator

The operator kneels, straddling one or both of the patient's thighs, or kneels by either side of the thighs, facing the patient's head.

The operator's hands are placed on the outer ends of the patient's lowest ribs; the fingers curl around the body, and are out of the sight of the operator. Care is observed to keep the hands away from the spine, and to avoid pressure on the pelvis.

The Mode of Operation

The operator's thumbs are rotated outwards, which assists him in holding his arms straight; he does not use his arm muscles, but his body weight is brought from his shoulders by bringing his body and shoulders forward.

This weight is gradually increased (there is no sudden thrust) until at the end of three seconds of vertical pressure upon the lowest ribs of the patient, the force exerted is felt to have compressed the parts, then the weight is suddenly removed.

When the pressure is thus exerted on the lowest ribs the organs under the diaphragm (the liver, stomach, spleen, kidneys, etc.,) drive up the diaphragm; when the hands are removed, or the pressure remitted, the displaced organs drop back to the normal relations.

When the diaphragm is thus forced to rise, the lungs are emptied. When it descends, a partial vacuum exists, and the lungs are filled by atmospheric pressure. The lungs are thus passive, like in normal breathing. Hence, by the Prone Pressure Method, there is no possibility of lacerating lung tissue, such as is liable to occur when mechanical apparatus of the bellows type is employed.

Rate Per Minute and Duration of Operation

The rate of operation should be about 12 a minute.

The lungs should be thoroughly emptied by three seconds of vertical pressure, in the manner described; the hands are then removed, and the refilling of the lungs takes care of itself.

Pressure and release of pressure—one complete respiration—occupies about five seconds.

This rate can be approximated by the operator following his own deep, regular respiration, if he is alone, or by counting or he can use his watch. If comrades are present, he can be guided by them.

Such efforts are usually successful within 25 minutes, but should be continued indefinitely, without interruption from any cause. One hour, even two hours or more, may be required to bring him to.

Supplemental Assistance

While the artificial respiration is being carried on, a second party should clear the mouth of all foreign material, then hold continuously a cloth saturated with aromatic spirits of ammonia near the nose. The collar and neck band may be loosened.

While this being attended to, a third party summons the doctor.

No liquids dare be given by the mouth while the patient is unconscious. How would you like to have somebody give you a drink of water when you were asleep?

On the arrival of the doctor, he can stimulate the heart of the patient with such drugs as atropine and strychnine, and can direct the infliction of such pain as is deemed requisite, such as pulling the patient's hair, pounding the sphincter and muscle, pulling the tongue.

Sprinkling cold water on the face in summer, and the use of blankets and hot water bottles in winter, are desirable supplemental measures.

The Advantages Of The Prone Pressure Method

CHARLES A. LAUFFER, M. D.

(1) Prone Pressure is a one man method. It is easy to learn and easy to apply. Under proper technique, one person can keep it up an hour without fatigue. A single operator, alone and unassisted, with no devices other than his hands and with no assistance from any other instructed person, can successfully resuscitate the victim of accidental drowning, gas asphyxiation, electric shock, or other condition requiring immediate efforts at artificial respiration.

(2) No time is lost hunting up mechanical devices, in which the persons applying them may be unskilled or which may not be in working condition. As to this latter point, I sometime ago ascertained that a Street Railway Company had twelve Pulmotors, not one of which was in working condition, and that they did not have twelve men competent to oporate them. Such apparatus deteriorates, the rubber parts break and leak, so that unless they are maintained in first class condition by daily or weekly inspection, and the replacement of parts by competent mechanics, they are not serviceable. Recently this company scrapped all their Pulmotors, and now rely entirely on Prone Pressure.

(3) Even if a serviceable mechanical device can be obtained, it may not be immediately available. It is unfair to the Prone Pressure Method to say that the mechanical device has resuscitated the victim, when the victim has been kept going by the manual method, and is practically resuscitated before mechanical devices reach the scene.

(4) The manual method elevated the diaphragm, pumps venous blood from the liver and splanchnic area to the heart, which is empty in electric shock, and by distending the heart and blood vessels by the massage of these parts, it aids in the restoration of circulation. As is well known, in electric shock the heart action may be suspended before respiration is arrested, consequently the manual method, by stimulating the cardiac function, holds out the greater prospect of restoring animation in the victims of electric shock.

(5) The use of mechanical devices of the bellows type requires a degree of pressure to inflate the lungs, and a degree of suction to empty the lungs, that is incompatible with normal physiologic breathing. In other words, the mechanical devices are more liable to do violence to the pulmonary tissues than are manual methods. The manual methods more closely imitate Nature.

(6) The water in the lungs encountered in drowning, and the edema of the lungs encountered in electric shock, and occasionally observed is asphyxiation by gases, require that the patient be in a prone position. The prone position not only facilitates the removal of liquids from the lungs and air-passages, but it permits the tongue to gravitate forward, thereby making it possible for one man, alone and unassisted, to resuscitate a comrade in distress.

Origin of Gas Jets

A woman's thimble is said to have been the means of suggesting the first gas burner, says the *Popular Science Monthly*. William Murdock, the inventor, first burned the gas simply as a flame from the end of a pipe. One day in an emergency he wished to stop the illumination. Hurriedly looking around for something, Murdock seized his wife's thimble and thrust it over the light, which was immediately extinguished. There was a strong odor of gas. however, and the experimentor applied a light to the thimble, discovering that it was full of holes, through which tiny jets of flame appeared. The importance of the result was that the illumination from those two or three tiny jets was much brighter than had been given by the great flare from the end of the pipe. Acting on the principle which this chance discovery revealed, he constructed what was known as the Cockspur burner.

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—CHARLES B. SCOTT, Chicago, Ill.
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
American Engineering Standards Committee, Representative on—A. H. HALL, New York, N. Y.
Award of Beal Medal—CHARLES A. MUNROE, Chicago, Ill.
Calorific Standards—J. B. KLUMPP, Philadelphia, Pa.
Chamber of Commerce, Representatives in—GEORGE B. CORTELYOU, New York, N. Y.
Convention Program—J. B. KLUMPP, Philadelphia, Pa., G. I. VINCENT, Vice-Chairman, Syracuse, N. Y.
Cooperation with Educational Institutions—J. A. NORCROSS, New Haven, Conn.
Devising Unit for Gas Measurment—R. B. BROWN, Milwaukee, Wis.
Educational—WALTON CLARK, Philadelphia, Pa.
Finance—E. H. ROSENQUEST, Bronx, N. Y.
Gas Safety Code—W. R. ADDICKS, New York, N. Y.
National Fire Protection Assn., Membership in—W. R. ADDICKS, New York, N. Y.
Nominating—CHARLES L. HOLMAN, St. Louis, Mo.
Rate Fundamentals—R. A. CARTER, New York, N. Y.
Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
United States National Committee of the International Commission on Illumination, Representatives on—HOWARD LYON, New York, N. Y.

[COPY]

City of Chicago
Office of the Mayor

September 19, 1921.

TO THE MEMBERS OF THE AMERICAN GAS ASSOCIATION:

Chicago recognizes the importance of the industry in which you are engaged, and its relation to the homes in large cities like ours, where the use of gas for general domestic purposes is practically universal. There are few, if any, homes in Chicago in which gas is not used for some purpose.

In speaking the welcome of our city to the members of the American Gas Association, I desire to express the hope that your sessions will be productive of great good and lasting benefit to you and your patrons, and that you will thoroughly enjoy your visit to our city and come again.

(Signed) Wm. Hale Thompson,
Mayor.

A. G. A. Convention Program

GENERAL SESSIONS

GOLD ROOM—MEZZANINE FLOOR—CONGRESS HOTEL

Wednesday Morning, November 9, Ten O'clock

Meeting Called to Order and Opening Remarks .....
....Charles A. Munroe, President, The Peoples Gas Light & Coke Co., Chicago, Ill.
Report of Secretary-Manager, Oscar H. Fogg, American Gas Association, New York, N. Y.
Election of Active Members .....
Report of Treasurer .....H. M. Brundage, Consolidated Gas Co., New York, N. Y.
Address of the President .....
.....Charles A. Munroe, The Peoples Gas Light & Coke Co., Chicago, Ill.
Report of Nominating Committee and Election of Officers .....
.....C. L. Holman, Chairman, Laclede Gas Light Co., St. Louis, Mo.
Report of Time and Place Committee .....
.....B. F. Lyons, Chairman, Beloit Water, Gas & Electric Co., Beloit, Wis.
Address "Merchandising Problems in the Gas Industry" .....
Charles Coolidge Parlin, Manager, Division of Commercial Research, Advertising Dept., The Curtis Publishing Co., Philadelphia, Pa.
Reports of General Committees .....
Accident Prevention.....Chas. B. Scott, Chairman, Bureau of Safety, Chicago, Ill.
Consideration of Existing Methods of Charging for Gas in Terms Other than Per Thousand Cubic Feet .....
.....H. C. Abell, Chairman, American Light & Traction Co., New York, N. Y.
Membership in Chamber of Commerce of the United States of America.....
....Geo. B. Cortelyou, National Councillor, Consolidated Gas Co., New York, N. Y.
Representation on American Engineering Standards Committee .....
.....A. H. Hall, Chairman, Central Union Gas Co., New York, N. Y.
Standard Gas Appliance Specifications .....
.....W. T. Rasch, Chairman, Consolidated Gas Co., New York, N. Y.

EXECUTIVE SESSION

(Only Company Member Delegates Eligible to Attend)

Election of Company Members.
Election of Directors.
Election of 1922 Nominating Committee.
Election of Committee on Resolutions.

Thursday Morning, November 10, Ten O'clock

Address—"Marketing Gas Securities Locally" .....
.....R. M. Searle, President, Rochester Gas & Electric Corpn., Rochester, N. Y.
Address by A. C. Bedford, Chairman of the Board of Directors, Standard Oil Company.
Report of Committee on Complete Gasification of Coal .....
A. W. Warner, Chairman, Philadelphia Suburban Gas & Electric Co., Chester, Pa.

Friday Morning, November 11, Ten O'clock

Address—"The Gas Industry's Biggest Task" .....
Samuel Insull, Chairman Board of Directors, Peoples Gas, Light & Coke Co., Chicago, Ill.
Report of Committee on Customers' Service .....
.....J. B. Myers, The United Gas Improvement Co., Philadelphia, Pa.
Preparation and Presentation of Rate Cases before Commissions .....
.....Wm. G. Woolfolk, Chicago, Ill.

ACCOUNTING SECTION SESSIONS

BALL ROOM—FIRST FLOOR—AUDITORIUM HOTEL

Wednesday Afternoon, November 9, Two O'clock

Opening Remarks and Report of Chairman .....
.....W. H. Pettes, Public Service Gas Co., Newark, N. J.
Report of Nominating Committee and Election of Officers .....
.....W. A. Doering, Boston Consolidated Gas Co., Boston, Mass.
Paper—"Soul of Service" .....
.....W. H. Rogers, Division Agent, Public Service Gas Company, Paterson, N. J.
Report of Committee on Fire Insurance Rates.....
.....E. C. Scobell, Rochester Gas & Electric Corpn., Rochester, N. Y.
Report of Committee on Standard Classification of Accounts .....
.....W. J. Meyers, Consolidated Gas Co., New York, N. Y.
Report of Committee on Uniform Accounting Nomenclature .....
.....W. A. Sauer, Chairman, The Peoples Gas Light & Coke Co., Chicago, Ill.

Thursday Afternoon, November 10, Two O'clock

Address—"Federal Income Tax as Applied to Gas Companies" .....
.....H. W. Forbes, Shearman and Sterling, New York, N. Y.
Report of Committee on Continuous Inventory of Fixed Capital .....
.....Ernest Johnston, Syracuse Lighting Co., Syracuse, N. Y.
Paper—The Importance of the Accounting Department under Commission Regulation
.....De Witt Clinton, Worcester Gas Light Co., Worcester, Mass.
Paper—"Form of Monthly Production Statement" .....
.....H. T. Hughes, Denver Gas & Electric Light Co., Denver, Colo.
Report of Committee on Job Order Systems .....
.....F. M. James, Western United Gas & Electric Co., Aurora, Ill.
Report of Committee on State Representatives .....
.....Ewald Haase, Milwaukee Gas Light Co., Milwaukee, Wis.

Friday Afternoon, November 11, Two O'clock

Open Forum—for the discussion of:

(a) General accounting subjects of interest to members or problems they are confronted with in their work.

(b) Subjects to be included in the Accounting Section program for 1921-1922.

COMMERCIAL SECTION SESSIONS

GOLD ROOM—MEZZANINE FLOOR—CONGRESS HOTEL

Wednesday Afternoon, November 9, Two O'clock

Opening Remarks and Report of Chairman .....
.....H. S. Schutt, C. H. Geist Co., Philadelphia, Pa.
Report of Nominating Committee and Election of Officers .....
J. D. Shattuck, Chairman, Philadelphia Suburban Gas & Electric Co., Chester, Pa.
Report of Merchandising Committee .....
.....H. J. Long, Chairman, The Kompak Company, New Brunswick, N. J.
Paper—"Gas Fired Hot Water Systems and their Applications" .....
....A. A. Schuetz, Industrial Engineer, Milwaukee Gas Light Co., Milwaukee, Wis.

Thursday Afternoon, November 10, Two O'clock

(Joint Session with Publicity and Advertising Section)

Opening Remarks and Report of Chairman .....
.....M. C. Robbins, The Gas Age-Record, New York, N. Y.
Report of Nominating Committee and Election of Officers .....
.....J. P. Hanlan, Public Service Gas Co., Newark, N. J
Paper—"What Advertising Did for One Small Town Gas Man" .....
.....Carl B. Wyckoff, Manager, Emporia Gas Co., Emporia, Kan.
Paper—"The Status of Advertising in the Gas Industry".....
.....C. W. Person, American Gas Association, 130 East 15th St., New York, N. Y.
Report of Industrial Fuel Sales Committee .....
.....H. O. Loebell, Chairman, H. L. Doherty & Co., New York, N. Y.

Friday Afternoon, November 11, Two O'clock

Paper—"How to Give Better Service with Less Gas" .....
.....S. S. Wyer, Consulting Engineer, Columbus, Ohio.
Report of Rate Structure Committee .....
J. D. Shattuck, Chairman, Philadelphia Suburban Gas & Electric Co., Chester, Pa.
Report of Industrial Fuel Contracts Committee .....
.....Chas. S. Smith, Chairman, American Gas Co., Philadelphia, Pa.
Report of Gas Lighting Committee .....
.....F. R. Barnitz, Chairman, Consolidated Gas Co., New York, N. Y.
Report of Heating Committee .....
.....G. E. Bennitt, Chairman, Consolidated Gas Co., New York, N. Y.

MANUFACTURERS SECTION SESSION

GOLD ROOM—MEZZANINE FLOOR—CONGRESS HOTEL

Monday Morning, November 7, 10:30 O'clock

Address of Chairman .....Geo. S. Barrows, Grinnell Co., Providence, R. I.
Report of Secretary.....P. H. Hall, American Gas Association, New York, N. Y.
Report of Nominating Committee.....H. D. Schall, Detroit Stove Works, Detroit, Mich.
Election of Chairman and Vice-Chairman.
Introduction of New Officers.
New Business.
Adjournment.

TECHNICAL SECTION SESSIONS

BANQUET HALL—NINTH FLOOR—AUDITORIUM HOTEL

Wednesday Afternoon, November 9, Two O'clock

Opening Remarks and Report of Chairman .....
.....R. B. Harper, The Peoples Gas Light & Coke Co., Chicago, Ill.
Report of Nominating Committee and Election of Officers .....
.....L. R. Dutton, Philadelphia Suburban Gas & Electric Co., Jenkintown, Pa.
Paper—"What Goes on in a Water Gas Machine"? .....
.....M. E. Benesh, The Peoples Gas Light & Coke Co., Chicago, Ill.
Report of Carbonization Committee .....
.....J. H. Taussig, Chairman, The U. G. I. Contracting Co., Philadelphia, Pa.
Report of Gas Oil Committee .....
.....W. H. Fulweiler, The United Gas Improvement Co., Philadelphia, Pa.
Report of Refractory Materials Committee .....
.....W. H. Fulweiler, Chairman, The U. G. I. Company, Philadelphia, Pa.

Thursday Afternoon, November 10, Two O'clock

(Parallel Distribution Session—BANQUET HALL—9TH FLOOR)

Report of Committee on Increasing Distribution Capacity .....
.....C. N. Chubb, Chairman, United Light & Railways Co., Davenport, Iowa.
Paper—"Utilization of Compressed Air for Clearing Gas Piping" .....
.....J. T. Griffin, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.
Report of Committee on Consumers Meters .....
.....J. A. Clark, Jr., Public Service Gas Co., Newark, N. J.
Report of Cast Iron Pipe Standards Committee .....
.....Walton Forstall, The United Gas Improvement Co., Philadelphia, Pa.

Thursday Afternoon, November 10, Two O'clock

(Parallel Chemical Session—9th Floor)

Report of Chemical Committee, ...C. A. Lunn, Consolidated Gas Co., New York, N. Y.
Report of Purification Committee .....
.....A. C. Fieldner, Chairman, Bureau of Mines, Pittsburgh, Pa.
"The Effect of Moisture on the Activity and Capacity of Iron Oxides for Gas Purification" .....Wm. A. Dunkley, U. S. Bureau of Mines, Urbana, Ill.
"The Seaboard Liquid Process for Gas Purification".....
.....F. W. Sperr, Jr., The Koppers Co., Pittsburgh, Pa.
"Determination of Hydrogen Sulphide in Illuminating Gas" .....
.....C. W. Jordan, The United Gas Improvement Co., Philadelphia, Pa., and
.....W. H. Fulweiler, The United Gas Improvement Co., Philadelphia, Pa.

Friday Afternoon, November 11, Two O'clock

Paper—"Why Should Gas Companies Sell their Tar to Distillers Instead of Working it Themselves" .....R. P. Perry, The Barrett Co., New York, N. Y.
Paper—"Some Experiments with the Mixing of Different Gravity Gases in Holders"
.....H. E. Bates, The Peoples Gas Light & Coke Co., Chicago, Ill.
Report of Committee on Deposits in Gas Pipes and Meters" .....
.....O. A. Morhous, Consolidated Gas Co., Astoria, L. I., N. Y.
Report of Committee on Disposal of Waste from Gas Plants .....
.....F. W. Sperr, Jr., The Koppers Co., Pittsburgh, Pa.

In the September issue of the *World's Work*, Floyd W. Parsons has an enlightening article on "Coal To-day and To-morrow." In it there is interesting data on gas which was supplied him by this Association.

Exhibition Spaces Allotted

The notice of space allotments was mailed to all exhibitors on August 4.

Elizabethan Room (demonstrating their product with gas connection). Exhibitors will be found in the following locations:

1. Welsbach Company, Gloucester, N. J.
2. Welsbach Company, Gloucester, N. J.
3. G. F. Schmidt, Chicago, Ill.
4. Century Stove & Mfg. Co., Johnstown, Pa.
5. American Radiator Co., Chicago, Ill.
6. Weir Stove Co., Taunton, Mass.
7. Milwaukee Gas Specialty Co., Milwaukee, Wis.
8. Kennedy-Toombs Co. Inc., New York, N. Y.
9. Quick Meal Stove Co. Div., St. Louis, Mo.
10. The Kompak Co., New Brunswick, N. J.
11. The Crandall Pettee Co., New York. N. Y.
12. The J. H. Grayson Mfg. Co., Athens, O.
13. The Cutler-Hammer Mfg. Co., Milwaukee, Wis.
14. James B. Clow & Sons, Chicago, Ill.
15. Claus Automatic Gas Cock Co., Milwaukee, Wis.
16. A. H. Wolff Gas Radiator Co., New York, N. Y.
17. The Scott Gas Appliance Co., Washington, D. C.
18. General Gas Light Co., New York, N. Y.
19. Chicago Vitreous Enamel Product Co., Cicero, Ill.
20. Surface Combustion Co., New York, N. Y.
21. Malleable Iron Range Co., Beaver Dam, Wis.
22. The Michigan Stove Co.. Detroit, Mich.
23. The Estate Stove Co., Hamilton, O.
24. Johnson Gas Appliance Co., Cedar Rapids, Ia.
25. H. A. Wilson Co., Newark, N. J.
26. National Stove Co., Div., Lorain, O.
27. The Improved Appliance Co., Brooklyn, N. Y.
28. Armstrong Cork Co., Pittsburg, Pa.
29. Detroit Stove Works, Detroit, Mich.
30. The G. S. Blodgett Co., Burlington, Vt.
31. Walker & Pratt Mfg. Co., Boston, Mass.
32. Strause Gas Iron Co., Philadelphia, Pa.
33. New Process Stove Co., Div., Cleveland, O.
34. Roberts & Mander Stove Co., Philadelphia, Pa.
35. Reliable Stove Co., Div., Cleveland, O.
36. Wm. M. Crane Co., New York, N. Y.

Florentine Hall and Adjoining Rooms, Second Floor, Congress Hotel (dead exhibits).

37. The Bristol Company, Waterbury, Conn.
38. Comstock Castle Stove Co., Quincy, Ill.
39. The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
40. General Gas Appliance Co., New York, N. Y.
41. Lindsay Light Co., Chicago, Ill.
42. Detroit Washing Machine Corp., Detroit, Mich.
43. The Wales Company, Kalamazoo. Mich.
44. Reznor Mfg. Co., Mercer, Pa.
45. Rathbone, Sard Co., Albany, N. Y.
46. The Ofeldt Gas Fired Boiler Co., Nyack, N. Y.
47. The Cleveland Heater Co., Cleveland, O.
48. The Lovekin Water Heater Co., Philadelphia, Pa.
49. Chambers Manufacturing Co., Shelbyville, Ind.
50. Robertshaw Manufacturing Co., Youngwood, Pa.
51. Peninsular Stove Co., Detroit, Mich.
52. A-B Stove Co., Battle Creek, Mich.
54. Connelly Iron Sponge & Gov. Co., Chicago, Ill.
56. The Western Gas Construction Co., Fort Wayne, Ind.
57. The Western Gas Construction Co., Fort Wayne, Ind.
58. H. Mueller Manufacturing Co., Decatur, Ill.
59. Acme Brass Works, Detroit, Mich.
60. Pittsburgh Meter Co., Pittsburgh, Pa.
61. The West Gas Improvement Co. of America, New York, N. Y.
62. Quigley Furnace Specialties Co., New York, N. Y.
63. Bartlett Hayward Co., Baltimore, Md.
64. The U. G. I. Contracting Co., Philadelphia, Pa.
65. The Koppers Co., Pittsburg, Pa.

66. The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
67. Bailey Meter Co., Cleveland, O.
68. The Foxboro Co. Inc., Foxboro, Mass.
69. Taylor Instrument Companies, Rochester, N. Y.
70. John J. Griffin & Co., Philadelphia, Pa.
71. American Meter Co., New York, N. Y.
72. D. McDonald & Co., Albany, N. Y.
73. Johns-Manville, Inc., New York, N. Y.
74. Johns-Manville, Inc., New York, N. Y.
75. The Roberts Brass Mfg. Co., Detroit, Mich.
76. S. R. Dresser Mfg. Co., Bradford, Pa.
77. The Lattimer Stevens Co., Columbus, O.
78. Equitable Meter Co., Pittsburgh, Pa.
79. National Tube Co., Pittsburgh, Pa.
80. The Sprague Meter Co., Bridgeport, Conn.
81. The Gas Age-Record, New York, N. Y., and Chicago, Ill.
82. The Gas Industry, Buffalo, N. Y.
83. American Gas Journal, New York, N. Y.
84. The Intercolonial Gas Jour. of Canada, Hamilton, Canada.
85. The Eclipse Stove Co., Mansfield, O.
86. The Sands Manufacturing Co., Cleveland, O.
87. Hugo Manufacturing Co., West Duluth, Minn.
88. The Canton Clothes Dryer Co., Canton, Ohio.
89. Superior Meter Co., Brooklyn, N. Y.
90. Atlantic Tubing Co., Providence, R. I.
93. George M. Clark & Co. Div., Chicago, Ill.
94. Eriez Stove & Mfg. Co., Erie, Pa.
95. Humphrey Co. Div., Kalamazoo, Mich.
96. Hale Manufacturing Co., Chicago, Ill.
97. Benson Manufacturing Co., Chicago, Ill.
98. The Bryant Heater & Mfg. Co., Cleveland, O.
99. George D. Roper Corp., Rockford, Ill.
100. Pittsburgh Water Heater Co., Pittsburgh, Pa.
101. Van Zandt Gas Appliance Co., St. Louis, Mo.
103. The Hoffman Heater Co., Lorain, O.
105. Ruud Manufacturing Co., Pittsburgh, Pa.
106. Kalamazoo Loose Leaf Binder Co., Kalamazoo, Mich.
109. Cribben & Sexton Company, Chicago, Ill.

Register Early—Be Prompt in Attendance

You, who will attend the Third Annual Convention, come early to the Registration Desk. You will be promptly served and the annoyance of having to wait will be avoided.

Attend the meetings promptly. Our conventions bring together hundreds of men whose time is valuable. Fifteen minutes delay in starting a session is really the loss of fifteen minutes multiplied by the number of delegates present and as such, it is time well worth saving.

The General Sessions will be started promptly at ten o'clock each morning; the Sectional Sessions promptly at two o'clock each afternoon. Our meetings have been noteworthy in their promptness in starting and the dispatch with which they have been conducted. Please do your part to make them even more so.

Associations Affiliated with A. G. A.

Canadian Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—C. S. Bagg, Montreal
Sec.-Tr.—G. W. Allen, Consumers' Gas Co., Toronto
Conv., 1922

Empire State Gas and Electric Association

Date of Affiliation—Nov. 21, 1919
Pres.—H. W. Peck, Adirondack Pr. & Lt. Corpn., Schenectady, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Conv., Oct. 6-7, 1921, Lake Placid, N. Y.

Illinois Gas Association

Date of Affiliation—Mar. 19, 1919
Pres.—H. H. Clark, 325 Peoples Gas Bldg., Chicago, Ill.
Sec.-Tr.—R. V. Prather, DeWitt-Smith Bldg., Springfield, Ill.
Conv., 1922

Indiana Gas Association

Date of Affiliation—April 24, 1919
Pres.—Morse Dell Plain, No. Indiana Gas & Elec. Co., Hammond, Ind.
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., 1922

Iowa District Gas Association

Date of Affiliation—May 21, 1919
Pres.—C. N. Chubb, United Light & Rwys. Co., Davenport, Ia.
Sec.-Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
Conv., 1922

Michigan Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—J. W. Batten, Detroit City Gas Co., Detroit, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., 1922.

Missouri Association of Public Utilities

Date of Affiliation—June 18, 1920
Pres.—H. Spochrer, Union Elec. Lt. & Pr. Co., St. Louis, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Wiley F. Corl, Chmn. Affiliation Com., Missouri Utilities Co., Mexico, Mo.
Conv., 1922

New England Association of Gas Engineers

Date of Affiliation—Feb. 19, 1919
Pres.— Burton Smart, Portland Gas Lt. Co., Portland, Me.
Sec.-Tr.—J. L. Tudbury, Salem Gas Light Co., Salem, Mass.
Conv., 1922

Gas Sales Association of New England

Date of Affiliation—Oct. 1, 1919
Gov.—H. J. Pettengill, Jr., Blackstone Valley Gas & Electric Co., Pawtucket, R. I.
Sec.—M. Bernard Webber, 150 Congress St., Boston, Mass.
Annual Meeting, 1922

New Jersey Gas Association

Date of Affiliation—April 25, 1919
Pres.—H. H. Newman, Public Service Gas Co., Trenton, N. J.
Sec.-Tr.—H. E. Mason, Consolidated Gas Co. of N. J., Long Branch, N. J.
Conv., 1922

Pacific Coast Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—W. M. Kapus, Northwest Gas & Electric Equipment Co., Portland, Ore.
Sec.-Tr.—W. M. Henderson, 812 Howard St., San Francisco, Cal.
Conv., 1922.

Pennsylvania Gas Association

Date of Affiliation—April 10, 1919
Pres.— E. L. Smith, Towanda Gas Co., Towanda, Pa.
Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
Conv., 1922

South Central Gas Association

Date of Affiliation—Oct. 15, 1919
Pres.—C. B. McKinney, 505 Scollard Bldg., Dallas, Tex.
Acting Sec.-Tr.—C. H. Seidenglanz, 1501 Commerce St., Dallas, Tex.
Conv., Oct. 11, 12, 13, 1921, Shreveport, La.

Southern Gas Association

Date of Affiliation—May 20, 1919
Pres.—L. I. Pollitt, Southern Gas & Electric Corpn., Lexington Bldg., Baltimore, Md.
Sec.-Tr.—G. H. Smith, City Gas Co., Norfolk, Va.
Conv., 1922

Wisconsin Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—J. P. Pulliam, Wisconsin Public Service Co., Milwaukee, Wis.
Sec.-Tr.— Henry Harman, 182 Wisconsin St., Milwaukee, Wis.
Conv., 1922

OTHER ASSOCIATIONS

Natural Gas Association of America

Pres.—L. B. Denning, Pittsburgh, Pa.
Sec.-Tr.—Wm. B. Way, 904-5 Oliver Bldg., Pittsburgh, Pa.
Conv., 1922

Society of Gas Lighting

Pres.—Alex. H. Strecker, Newark, N. J.
V.-Pres.—W. Cullen Morris
Sec.—Geo. G. Ramsdell, 130 E. 15th St., New York, N. Y.
Treas.—Wm. J. Welsh
Conv., Dec. 8, 1921, New York, N. Y.

Southwestern Electrical and Gas Association

Pres.—A. Hardgrave, Dallas, Tex.
Sec.—H. S. Cooper, Slaughter Bldg., Dallas, Texas
Treas.—J. B. Walker
Conv., 1922

ACCOUNTING SECTION

W. H. PETTES, Chairman — EWALD HAASE, Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE — 1921

At Large

BRUNDAGE, H. M., New York, N. Y.
CONOVER, J. L., Newark, N. J.
DOERING, W. A., Boston, Mass.
FERRIS, E. J., (Mfr.) New York, N. Y.
HEINS, J. W., Philadelphia, Pa.
JAMES, F. M., Aurora, Ill.
JOHNSTON, ERNEST, Syracuse, N. Y.
McLEOD, J. E., St. Louis, Mo.
MEYERS, W. J., New York, N. Y.
SAUER, W. A., Chicago, Ill.
SCOBELL, E. C., Rochester, N. Y.
STERRETT, W. G., Chester, Pa.

Representing Affiliated Societies

ARMSTRONG, J. J., Toronto, Can. (Canadian)
BORDEN, A. W., Hastings, Nebr. (Iowa)
CHAPIN, C. H. B., New York, N. Y. (Empire State G. & E. Assn.)
DEAL, E. C., Springfield, Mo. (Missouri)
EATON, H. M., Detroit, Mich. (Michigan)
HAASE, EWALD, Milwaukee, Wis. (Wisconsin)
HOUGHTON, W. E., Los Angeles, Cal. (Pacific Coast)
HOY, CHAS. W., Glassboro, N. J. (New Jersey)
JAMES, F. M., Aurora, Ill. (Illinois)
McCABE, J. B., Dallas, Texas. (South Central)
NORTON, W. F., Nashua, N. H. (N. E. Gas Eng.)
PORTER, EDW., Philadelphia, Pa. (Pennsylvania)
SHEARON, B. P., Hammond, Ind. (Indiana)
STOTHART, E. C., Charleston, S. C. (Southern Gas)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Fire Insurance Rates - E. C. SCOBELL, Rochester, N. Y.
Job Order Systems—F. M. JAMES, Aurora, Ill.
Office Labor Saving Devices—J. L. CONOVER, Newark, N. J.
Continuous Inventory of Fixed Capital—ERNEST JOHNSTON, Syracuse, N. Y.
Nominating—W. A. DOERING, Boston, Mass.
Standard Classification of Accounts and Form of Annual Report to Public Service Commissions—W. J. MEYERS, New York, N. Y.
State Representatives—EWALD HAASE, Milwaukee, Wis.
Uniform Accounting Nomenclature — W. A. SAUER, Chicago, Ill.

Michigan Association Recommends Permanent Adoption of Uniform Classification of Accounts

ON November 30 last the Michigan Public Utilities Commission tentatively adopted the theory and general plan of the Uniform System of Accounts for Gas Corporations accepted by the National Association of Railway and Utilities Commissioners and ordered that on and after January 1, 1921, all gas utilities under the jurisdiction of the Commission be required to set up their accounts in substantial accord with such system.

The permanent adoption of a classification is now being considered by the Commission and the recommendation of the Michigan Gas Association as set forth in the following copy of letter of the President will be of interest to our members:

September 7th, 1921.

Mr. W. J. Myers,
130 East Fifteenth Street,
New York City.

Dear Sir:

Further with reference to the status of the Classification of Accounts to be used by the Michigan Gas Companies at the instigation of the Michigan Public Utilities Commission, I wish to say that the Michigan Gas Association's Accounting Committee met with the statistician of the Michigan Public Utilities Commission, Mr. Calkins, September 1st and recommended to him the permanent adoption of the new National Classification. This recommendation was agreed to by Mr. Calkins, and the recommendation is now being forwarded officially to

the Commission in accordance with the following letter:

To the
Michigan Public Utilities Commission,
Lansing,
Michigan.

Gentlemen:

At the 1920 meeting of the Michigan Gas Association, its Accounting Committee was continued and instructed to assist and co-operate with the Michigan Public Utilities Commission in its efforts looking to the adoption and application of a Uniform Classification of Accounts for gas corporations. Pursuant to this instruction, the Committee has held a number of meetings to discuss the various phases of the subject, and members of the Committee have on a number of occasions informally discussed matters pertaining to the Classification with Mr. Calkins.

In November 1920, you tentatively adopted a Classification recommended by the National Association of Railway and Utilities Commissioners.

The Accounting Committee of the Michigan Gas Association wishes now to recommend to you the permanent adoption of that Classification, because:

1. It is recommended for adoption by the National Association of Railway and Utilities Commissioners wherever such adoption would not conflict with local statutes.

2. It is recommended by the American Gas Association and the National Electric Light Association.

3. That by virtue of being sponsored by the above Associations, it possesses the possibility of being widely adopted, which qualification no other Classification now has.

It is the opinion of the Michigan Gas Association's Accounting Committee that nation wide uniformity in Classification of Accounts is so much to be desired that every assistance should be given in promoting such a consummation.

Reference may be made to the fact that no single Classification will meet the desires of all Commissions or of all Gas Companies. In certain particulars this Committee feels that more or less radical modifications in the present Classification are highly desirable. Agreeing with your statistician in some of his suggested changes, but again with a view to the maintenance of uniformity wherever possible. and in agreement with the suggestion of the National Association, it recommends that such proposed changes be submitted to the Committee on Accounting of the National Association of Railway and Utilities Commissioners so that they may unify the recommendations made to them. In making recommendations for changes or revisions in the Classification as may seem wise from time to time, the Michigan Gas Association offers every support which it is possible to give.

This Committee holds itself ready to meet with you at any time desired for further discussion of the above recommendation.

Yours very truly

Committee on
Accounting of the
Michigan
Gas Association
Chairman.

The Michigan Gas Association's Accounting Committee at the suggestion of Mr. Calkins will now assist him in the amplification of this Classification for the use of the Michigan Companies.

Very truly yours,
(Signed) J. W. Batten,
President,
Michigan Gas Association.

Come to Chicago!

Mechanizing the Mail

Committee on Office Labor Saving Devices
JOHN L. CONOVER, *Chairman*

THE ingenuity and initiative of the inventor has gone far toward elimination of human hands as a factor in the wholesale preparation of mail matter. Where it was once necessary to employ a multitude of clerks to perform much wearisome labor before bulk mail could be delivered to the post office, now the same task can be performed at less expense, and with greater speed and neatness, by a group of machines operated under supervision of several mechanically inclined clerks.

When business depended solely upon uncertain manual dexterity in its mail dispatching, considerations of time and expense often placed sales promotion by mail and other optional mailing projects outside the bounds of practicability. But this condition has changed. To-day a prodigious flow of letter mail streams from our post offices, and there is no home too humble or too remote from the trade centers that this force does not reach to create a desire, give direction to a want, or mould an opinion. Behind it all are various machines that have made it possible.

These machines came with the development of big corporate business. Big business organizations recognize the cost of labor involved in such operations as writing and folding letters, and addressing, sealing and stamping envelopes. Mechanical aids to this costly and monotonous work have been welcomed. It might be said without taking liberties with the truth that an organization's importance and progressiveness to-day is proportionate to the extent by which it has welcomed improved methods.

We are concerned here with devices which give impetus to the outgoing mail —bulk mail in particular. Following the typewriter came the duplicating machine, with wax, fibre and gelatinous stencils, or metal type—all designed to imitate typewriter script but not typewriter cost. An important machine which is classifiable to this group is the automatic typewriter which actually typewrites manifold work through the use of a perforated roll of paper, as in a player-piano.

Success in imitating typewriter script ranges all the way from that obtained in the output of the simple gelatin pan which is obviously a manifold product to that of the quotomatic typewriter which defies the expert to detect its orign. The output of the modern rotary duplicating machine is also excellent in giving the illusion of being an original letter. To obtain the note of individuality the typewriter itself is often used for the salutation, and the addressee's name is used once or twice in the text.

The name and address is often printed on the letter itself with metal plate or fibre stencil used in conjunction with the addressing machine. The same plate or stencil is used to address the envelope. To the excellent services of the addressing machine is due in no small measure the credit for making large-scale mailing possible. The file of plates or stencils, properly maintained, are at once a live mailing list and the basis of rapid machine addressing. To an aggressive sales manager the value of this file of plates or stencils is out of all proportion to its cost.

The outstanding features of the various addressing systems have been compared and discussed in a report by the Chairman of the 1920 Committee on Office Labor Saving Devices, published in the September 1920 issue of the Association MONTHLY. The Committee has also described in its 1919 annual report (see Proceedings) machines for accomplishing all of the operations involved in mailing with the exception of folding and inserting. The importance of the contrivances which perform this work entitles them to special note.

Paper-folding machines are manufactured by about a half-dozen manufacturers throughout the United States. Most of these machines are manufactured for use in the newspaper and book publishing business, but there are one or two makes particularly adapted to rapid letter and circular folding.

An essential to a good folder for office use is automatic feed. One machine of excellent performance has an automatic feed arrangement that will take 500 to 1000 letters or circulars at a loading, according to thickness of paper stock. It will accomodate sheets as large as eleven inches square. This machine makes one, two or three folds in a letter or circular and there are no reasonable limitations to the style in which folds can be made.

The timing of the machine's mechanical movements is governed by a set of cams. Before each fold can be made the paper must be "bellied." The feeder itself provides for the first bellying of the paper by its bowed construction. The creasing of the paper is done by rollers, and it is in the manner whereby the paper is accurately guided into these various rollers that the machine arrests attention. The first set of rollers draws the paper, sheet by sheet from the feeder. This is accomplished by the upper roller, the fluted construction of which causes the roller to

is obtained through the control of one of the cams. This cam throws the rubber roller into contact with the paper at rapid intervals to permit of the engagement of one sheet only at a time. The paper after passing through the first set of rollers is bellied for the second crease by a small steel plaque or "knife." The timing of the action of this knife is governed by another cam. This knife not only bellies the paper but throws the paper into engagement with the second pair of rollers, and the second fold is made. The third fold is similar in principle to the second and the action is likewise governed by another cam. The circular or letter, neatly and completely folded, is finally ejected and stacked.

The machine is equipped with adjustable gauges and attachments through use of which it can be adapted quickly to any kind of fold that may be desired.

Average practical operating speed of the machine is at least 6,000 letters per hour although the machine actually operates at twice that speed. This figure, however, is a safe one to use as a basis for estimating delivery of work. Anyone who has had experience in getting out circular letters in hundred-thousand lots will realize this machine's value.

The inserting machine is also automatically fed. This link in the mechanical handling of mail was the last to be forged. In the 1920 Business Show at Grand Central Palace, New York City, there was exhibited an operating model

of an automatic inserting machine. This machine inserts two enclosures and a letter or circular into envelopes ranging in size from No. 6 to No. 11. It also seals the envelope. It will enclose automatically circulars, pamphlets, blotters, letters, bills, checks or other objects of like nature. It may be operated with or without the sealing device, so that if additional insertions are to be made the envelopes containing previously inserted matter may be sent through the machine again. A maximum speed of 4,500 envelopes per hour is claimed for this machine. It is expected that the manufacturers of the machine will begin production for the market at an early date.

The final operations for consideration are sealing and stamping. It is true that sealing is done by the inserting machine but this operation is pre-eminently the function of the several automatic and hand devices which have been common for years. Certain machines seal under hand propulsion and are hand fed. Other sealing machines combine electric drive and automatic feed.

The devices which do sealing only would suggest the hand operated stamp affixers as their complement. Of these there are at least two makes and both are operated by simple hand percussion. The magazine of the stamp affixer is loaded with coiled stamps. As the stamps are fed out from the coil, they are moistened and a counter automatically registers the number used.

Simultaneous sealing and stamping is a feature embodied in one important American office appliance. This machine is rapid, sturdy and dependable. It is hand-fed, but the hand feeding can be done so quickly that the output of the machine when operated by a conscientious employee will exceed that of automatic fed machines which handle units of like nature.

Actually none but the largest gas companies are using all or even a majority of the machines mentioned; duplicating and addressing machines are in widespread use, but the folding machine and the simultaneous sealer and stamper are reported by comparatively few gas companies. The inserting machine is a fact as regards design and invention but an eventuality so far as marketing is concerned.

The question might be asked: Of what interest to a small gas company is a folding machine or automatic inserter or simultaneous mailer and sealer? For one thing, a knowledge of them might become suddenly valuable in the event of an emergency job where time limitations were imposed. Also, if these machines were used on a job or jobs aggregating several hundred thousand pieces of mail, the saving over the cost of doing the same work by hand would pay for them.

It is difficult to say just at what point the machines or some of them should be installed. The total outgoing mail of a gas company during a year might run well into the hundred thousands of pieces, but there might not be present a sufficient degree of uniformity in the mail matter to warrant extensive application of machinery.

Where general uniformity in size and style of the pieces is present, as when delinquency notices, appliance advertising, or bills are mailed, certain of these machines have come to be regarded as necessities.

A Continuation of Departmental Manual

Which appear in September.

Collection Department Manual
Collection Procedure

Section 521

Collectors issue a receipt for each payment made to them for charges owed on an account (a separate receipt for each folio). In the case of bills due for more than one address, the collector issues a receipt for the amount owed at such place and shows the separate districts, ledgers, pages, and folios. A separate receipt is issued for lamp charges. These charges are itemized as shown on the collection sheet. On such receipts the collector shows the district, ledger, page, and folio of the corresponding gas account and enters the number of the lamp ledger below the number of the gas ledger.

Receipts are issued only on the official "collection receipt" forms later described.

Receipt Books:

Collection receipts (form 112) are furnished in books of fifty sets each. Receipts for "current" collections are printed on white paper, and those for "final" collections on yellow.

The receipt books are so designed that each receipt is issued in triplicate. A double-faced carbon is provided for insertion between the second and third sheets of the set issued. Thus an impression is made on the face of the third copy and on the back of the second copy, which is of thin paper so as to allow the impression to be read from the face.

Each receipt bears a number. *Under no circumstances must a receipt be destroyed.* If one is spoiled it is to be marked "Void" and left in the book. Receipt books are charged to the Chief Clerk. These books are numbered and are charged to the collectors, who sign a record book in the custody of the Chief Clerk to show that they have received a book. When all of the receipts in a book have been used the book is returned to the Chief Clerk, who makes a notation in the record book to indicate that the used receipt book has been returned.

—Come to Chicago—

An Apology to Mr. Farwell

In the Accounting section of the September issue of the MONTHLY appeared an article "Departmental Manuals" contributed by Stanley P. Farwell. In the confusion of getting a late publication out bit by bit, the last page was mis-placed as a separate article. We are publishing it above.

*Turn on the Light and Have Faith

GEO. L. MYERS, Portland Gas and Coke Company

THE present state of public opinion is not alone attributable to the practices of by-gone days. There are certain conditions which continue to keep public opinion in its present antipathetic state, due solely to a lack of understanding and the nature of the service.

People get the notion a public service company is unduly profitable because of the magnitude of the investment and the gross volume of the business. Public service companies usually represent the largest investments of capital in the average community served and the volume of their business is the more generally known because of the facts disclosed by regulation. People are not cognizant of the profitableness of the business in terms of return upon the fair value and the rate of turnover. The absence of competition and comparable substitutes in kind and cost exaggerates their notion of profit.

The accessibility of the service and the simplicity of its use detract from its importance and value. Hence, people have little appreciation of what is back of the simple devices which release the service to household and industry. What President Harding said in his address at the mid-year meeting of the American Railway Association on January 8, 1920, is pertinent to these comments. "Rarely does anybody utter appreciation, though genius and efficiency are nowhere more marked in good service, and no one seems to think of their essential character until traffic is suspended and then watch the change in the atmospheric conditions."

The speculative enterprises of another day with its transgressions has been followed by the development enterprise of a new day with its spirit of service first. The day of freedom from public control is gone. The abuses of monopolistic power have been eliminated by the restraints of such control. All the public service companies expect or have a right to demand is a square deal, but all too frequently in asking for it they are confronted with agitation in opposition to it

*Part of paper presented at Convention of Pacific Coast Gas Association, Del Monte, California, September 20-23, 1921.

because of the arrogant and unethical practices of the past for which management and ownership of the present day are not responsible.

Public service managements of to-day know and properly appraise the value of service and unethical practices. Furthermore, they are held to a strict accountability in their service and conduct by the almost unlimited powers which are exercised in regulation. Therefore, as President Harding has well said, "let us not go back to the crimes of exploitation and frenzied finance. All that has been established and properly critized and fully condemned. The exploitation of ten or twenty years ago justifies no failure in good faith to-day. The public which is served has an obligation no less than that of those who serve it."

However, this transition has not displaced the repressive spirit. The people want to act in good faith, but they are still actuated by distrust and suspicion because they do not know and understand. Regulatory authorities who are constructively minded thus labor under difficulties in their efforts to do justice to the industry and placate those to whom they feel accountable for their acts and to whom they feel indebted for the powers they exercise. Those who are not so minded and who are moved by political considerations will continue to do injustice to the industry until public sentiment moves them to do otherwise. It is true there are regulatory authorities who are fearless in their acts and in their defence of them, but it is equally true that if public sentiment is not in sympathy with what they do their positions are jeopardized. Furthermore the vicissitudes of politics influence the tenure of office. Therefore, it must be apparent that regulatory authorities cannot be relied upon to build up constructive public sentiment from their knowledge of the facts, either through their official acts or in public discussion. Regulatory authorities in most instances want to be fair and in some instances would be willing to have a part in moulding public sentiment in conformity with the facts, but the everchanging personnel in commissions and the well-nigh irresistible influence of politics will cause regulatory authorities generally to be led by public opinion and not to lead the people into a constructive state of mind.

The foregoing remarks are designed to give a fundamental approach to a true perspective of the primary need in promoting the progress of public service enterprise.

Charles A. Munroe, President of the American Gas Association, recently suggested that we "promptly agree among ourselves as to what the gas industry needs; then as one man, with our shoulder to the wheel, let's get it. It can be done." It occurs to me its greatest need is akin to that of the other utilities, namely, to win public support and confidence.

To attain this worthy purpose service and information are essential. The public must be courteously, efficiently and adequately served and must have an understanding and knowledge of the requirements in order to render such service and its importance and function in promoting the fullest development of our economic possibilities and resources and in fostering the comfort and contentment of our social order. The endeavor should be the cooperative undertaking of the gas,

electric power and traction, telephone, telegraph and water utilities in order to be the most effective. It should not be of the moment, but of continuity. There are four very good reasons for it; first, the facts to be learned are many and not simple and they can be learned only through a constant process of reiteration in variable language and under variable circumstances if all the people are to be reached and there are variable conditions in politics, economics and in the art which offer new problems and put a new aspect upon old problems; second, during all this time there is a growth of those who must come to know and understand; third, the collective memory is in a constant state of flux and needs to be repeatedly refreshed; fourth, there are those who constantly oppose and criticize honestly and dishonestly who must be convinced on the one hand and disarmed and exposed on the other.

The new psychology of increasing prevalency within the industry of taking the public frankly, candidly and avowedly into confidence in making it conversant with the facts is the most hopeful presage for the future progress of the industry. In the past we have devoted most of our time to the accounting, commercial, financial, operating and technical problems of the industry, which have been and can be solved within the industry by the genius and enterprise of those of expert knowledge and practical experience, but the problem of public relations can be solved only through contact with the people in service and information. However, the solution of the other problems can be made more simple and progressive if the relations between the public and the industry are harmonious and liberal. The state of public opinion as a heritage of the mistakes of the past and the advent of regulation, which is principally reflected by public opinion, has aroused the industry to the vital need of ways and means to develop constructive public sentiment.

The responsibility for any well defined, concerted and practical plan of taking the message of the enterprise to the people devolves upon the talent and resourcefulness of the enterprise itself. It must assume leadership and the burdens the task imposes.

Let us then agree among ourselves that the immediate problem of vital concern to the industry is public relations and further agree that this problem can be most advantageously solved in cooperation with the other utilities and then give thought and form to ways and means to the solution of it.

Some of the opportunities which offer to put across the message and to build up good-will may be enumerated as follows:

Press
Employes
Customer ownership
Consumers
Civic and commercial organizations
Schools
Motion pictures
Chatauqua
Good-will advertising

The executives of the gas industry should give full consideration to policies which will make it possible to utilize the agencies mentioned. The Pacific Coast Gas Association should knit the gas industry into a unit of common purpose and effort. It and the other utilities should then pool their talents and re-

sourcefulness to take the problem of building up a constructive public sentiment from the domain of local to that of state activity, because, as has been stated, it is the political policy of the state that determines the restraints and requirements of government control. This is not stated in a spirit of disparagement of what has been done through company or local effort, which is fundamental to the broader field of endeavor, but to emphasize the point of view that no chain is stronger than its weakest link and that the weak links of public sentiment in each state will be a menace to the strength of the whole.

We should have a sincere faith in the common sense and fairness of the people. Their judgment has stood the test in many a crisis that has determined the course of our political and economic policies. The test in each instance has been withstood by their wisdom and not their prejudices because they have been informed of the facts through intensive campaigns of education. Our people are moved by the spirit of fair play. They need only to know and understand to act in accord with that spirit.

Carl D. Jackson of the Public Service Commission of Wisconsin in a recent address stated that "it is fundamentally true that the people as a whole have a keen sense of justice and right and in the long run with full understanding generally arrive at a correct decision. The difficulty is in getting the full facts before the people. The people are entitled to and will insist upon reasonable rates, but they are willing to pay for good service. Publicity of the right sort can be of great assistance in this matter. If the public knows it is getting a square deal, it will give a square deal."

Alexander T. Vogelsang, former Assistant Secretary of the Interior, recently gave expression to the opinion that "the public is fair when it understands, and when it does not understand it is generally viciously unfair, or indifferent to the attacks of those who seem willing to make sacrifice of legitimate investment and essential public good for political reasons.....The only cure is truth, light and education."

The prejudices of the people are assiduously cultivated and kept alive by the self-seeking politician, who acts without principle to enhance his selfish interest, the demagogues, who prefer the bliss of ignorance to the labor of thought and the irresponsible agitor, who by temperament is impelled to distroy and not to build. They are a small and militant minority, but powerful in their influence in the absence of refutation, directed by forces which are organized and resolute. The influence of their cunning sophistry and rant can be countered and destroyed only by the shafts of truth, which are sent on their way by the disclosures of indisputable facts.

David Lloyd George, the Premier of England, has said: "We must sweep aside prejudices. The difficulty, believe me, is not with interests, it is with prejudice. And that is equally true in every business. People talk about the vested interests. It is not the vested interests I am afraid of, it is vested prejudices. Sweep these away and the State can easily deal with interests. You must not take any man's property away. You cannot build a great State on dishonesty. You are bound to come to grief if you attempt it."

Let us not forget that we have a social obligation to perform. We cannot allow public service enterprise to be unjustly assailed and its property rights to be destroyed through the prejudices engendered by misrepresentation and falsehood. If we do we jeopardize all property rights and put our institutions in peril, institutions which have been built up and defended by the genius of our people and their sacrifices in blood and treasure.

Therefore, we should boldly, fearlessly and without reservation give the people all of the facts in order that they may intelligently judge and not leave unchallenged any unfair and untruthful attacks, which are made either wilfully or out of lack of knowledge and understanding. Furthermore, we should command their respect by determined insistence upon the protection of the rights which are vested in our property.

Let our slogan be "Turn on the light and have faith."

Looking Over the Old Files

NO Gas-Company can be popular for any length of time, no matter how courteous they may be, or what pains they may take to supply a pure and steady light; the officers of gas companies must expect to be censured, but they must be good natured, and if they cannot please all, they must try to please as many as possible. They must be like the editors, very just, very upright, and very willing to submit to abuse for the good of the public. **1861.**

Richmond, Va.—The Superintendent of the Gas-Light Works is elected by the people (being city works)—his political qualifications being more prized than his scientific attainments. The city makes no charge against itself for the public lights, but the estimated cost is considered in the charge to private consumers; so that those who burn gas—a large minority—pay the entire expense of lighting the city. All this would raise a rebellion in New York. **1860.**

The Retort Posthumous:—We have heard of the retort-courteous, and the retort-supercilious, and of the retort-disputatious ; but we never heard before of the retort-posthumous, and here it is. A Mr. William Kensett died lately in London, leaving £20 to charities, his body to the medical profession, with a legacy of £10 to the latter, on condition that they be consumed in one of their gas retorts of the company. When the company's annual report to its shareholders appears, we may possibly be informed what amount of light was evolved from the carbonization of the testator's bones, however deficient his brains may have been in the distillation of illuminating power ante-mortem. **1860.**

The Rev. Dr. Peter, of Chelsea, Tenessee, illuminates his church and dwelling with gas made out of cotton-seed, with the addition of a little rosin. The cost is said to be trifling and the gas is of excellent quality. **1861.**

American Gas Light Journal

"Gas Lights Out!"

Announcing his visit with loud rappings on the sidewalk, the gas inspector would promptly turn off the gas at the street if his command of "Gas Lights Out!" was not obeyed. The occupants of the house would then resort to candles or oil lamps.

That is what happened in the old days, when gas was supplied to people by contract, to be used for lighting purposes from sunset to a certain hour at night.

Today, thanks to the invention of the gas meter, no such inconvenience exists.

An instrument of accurate measurement, durable and dependable, the meter permits gas to be used at any time, in any quantity desired, *assuring our customers that they pay only for what they get, while we are assured of receiving payment only for what we supply.*

Truthfully may it be said:

There is no commodity on earth dispensed to the public with greater justice to the buyer and seller than manufactured gas.

(Insert the name of your Company here)

MEMBER OF THE AMERICAN GAS ASSOCIATION

Good Will Advertisement Number 18

The A. G. A. Film is Popular

THE Association's motion-picture film entitled "The Spirit of Service" is meeting with success wherever it is shown. In the few weeks since we announced that it was available for use to member companies for exhibition before employee and business mens' meetings as well as in the local picture houses, the film has been eagerly sought after by thirty-five gas company members of the Association, fifteen of which have already used it and reported favorably upon it.

Contrary to popular opinion, little if any difficulty has been encountered in getting the film shown at local movie houses as part of the regular entertainment. In only one instance did a gas man receive a refusal from the manager of a theatre when he approached him and asked for permission to run the film, and in this case it was not a refusal altogether, for the manager promised to use the film if it could be cut down to meet the requirements of his program. This, of course, could not be done.

The first company of record to request a loan of the film was the Tide Water Power Company, of Wilmington, N. C., which had made negotiations for its exhibition with the manager of the Lumina at Wrightsville Beach for July 9th to 20th. According to Raymond Hunt of the above company, the film was shown to an average attendance of 500 each night made up of the best people of Wilmington together with visitors from various parts of the South. Mr. Hunt says the impression made upon the audience was an appreciation of the importance of the gas industry.

Equal success was had by George B. Tripp, of Spartanburg, South Carolina, receiver for the South Carolina Light, Power and Railways Company. Mr. Tripp reports: "Your film was shown in the Rex Moving Picture Theatre on August 15th and 16th to a total of 1623 persons. This was a very fine film, covering as it did a very graphic presentation in brief form of the gas operations of a company. We refrained from advertising over the company's name in reference to the presentation of the film, so that as far as the public was concerned it was simply a case of educational news being presented through the usual film channels."

On August 17th and 18th the film was shown in the Capitol Theater at Oswego, New York, to two evening performances of 900 persons each and two matinees of 400 persons each. W. M. Borden of the Peoples Gas and Electric Company, who arranged for the exhibition, says the film "was good advertising." On the two days following the Grand Theater of Lancaster, Pennsylvania, ran the film to an audience of 6,000. H. J. Van Niedo of the Lancaster Gas Light and Fuel Company in reporting upon the film says: "Mr. Snyder, owner of the theater, expressed the general sentiment when he said: 'The picture is highly interesting and educational.'"

Charles Otten, Jr., manager of the Plymouth, Mass., Gas Light Company, had no trouble securing the permission of one of his theater managers to use the film. "I think this is a very good film," wrote Mr. Otten after its presentation, "and I believe the showing of it in Ply-

mouth will result in ultimate good to the Plymouth Gas Light Company. I have had several favorable comments and the manager of the theater thought it was a good film."

At Stevens Point, Wisconsin, A. A. Menzel, of the Wisconsin Valley Electric Company, had the picture shown in the Lyric Theater on August 23rd and 24th to an average attendance of 1,600. "The film was very interesting," he reports, "and the audience was very attentive. The children were also pleased with it."

Several companies in the West have been re-routing the film among themselves for about a month and some interesting reports are expected from them. In the case of the Colorado Springs Light, Heat and Power Company, the film was used for three days as part of the regular program of the America Theater and an audience of 4,335 saw it, according to F. J. Vogler, commercial manager of the company. Mr. Vogler's comment is as follows:

"The picture was shown at one of our best picture houses and was very good advertising. We sent out approximately 600 tickets to members of the Chamber of Commerce, Rotary Club and womens' organizations."

Seven prints of the picture are now in use in various parts of the country and shipping schedules are being arranged so that companies requesting the film may have it promptly. The only cost connected with a loan of the film is the postage charged for its shipment, and no money should be paid theater managers or others to secure its presentation. The film may be used by a company for two weeks but special arrangements will be made with holding companies who wish to re-route the picture over a period of one month or more. "The Spirit of Service" is one reel long and requires less than fifteen minutes to show.

--Come to Chicago--

Looking Backward

Hempstead, N. Y.—The gas holder of these works fell over last Saturday evening from weakness in the knees. A deputation of Directors of the Company undertook to replace it when it took another roll and came near rolling them into the middle of next week. A few dollars extra expended at the outset would have averted this trouble. **1861.**

American Gas Light Journal.

COMMERCIAL SECTION

H. S. SCHUTT, Chairman — A. P. POST, Vice-Chairman

LOUIS STOTZ, Secretary

MANAGING COMMITTEE — 1921

At Large

ABBOTT, M. E., Taunton, Mass.
BARNES, CYRUS, Boston, Mass.
BARNITZ, F. R., New York, N. Y.
BARTHOLD, WM. H., New York, N. Y.
BENNITT, GEO. E., New York, N. Y.
DAVIES, J. E., Chicago, Ill.
GASTON, LUTHER, Lebanon, Pa.
GOULD, WM., Boston, Mass.
HEWITT, ARTHUR, Toronto, Ont., Can.
JELLIFFE, C. N., New York, N. Y.
KAHN, A. M., Hamilton, Ohio
LEARNED, J. G., Chicago, Ill.
LEMKE, FRANK, Kalamazoo, Mich.
LOEBELL, HENRY O., New York, N. Y.
LONG, H. J., New Brunswick, N. J.
MYERS, J. B., Philadelphia, Pa.
POST, A. P., Philadelphia, Pa.
RUTLEDGE, F. J., Philadelphia, Pa.
SCHUTT, H. S., Philadelphia, Pa.
SHERWOOD, J. M., New York, N. Y.
SMITH, CHAS. S., Philadelphia, Pa.
STEPHANY, E. J., Pittsburgh, Pa.
YOUNG, R. R., Newark, N. J.

Representing Affiliated Societies

BURKE, E. J., Indianapolis, Ind. (Indiana)
CHAMBERLAIN, G. R., Grand Rapids, Mich. (Mich.)
CHAPIN, C. H. B., New York, N. Y. (Empire State)
CLARK, H. H., Chicago, Ill. (Illinois)
CORL, WILEY F., Mexico (Missouri)
CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
CRANKSHAW, J. WARD, Allentown, Pa. (Pennsylvania)
FLAUTT, J. J., New Orleans, La. (South Central)
FORNEY, J. A., Charlotte, N. C. (Southern)
HANLAN, J. F., Newark, N. J. (New Jersey)
JOHNSON, W. B., Toronto, Ont. (Canadian)
ST. JOHN, JOHN, Madison, Wis. (Wisconsin)
TAYLOR, W. H., Omaha, Neb. (Iowa District)
WEISS, FRANK, Los Angeles, Cal. (Pacific Coast)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Gas Lighting—F. R. BARNITZ, New York, N. Y.
Heating—GEO. R. BENNITT, New York, N. Y.
Industrial Fuel Sales—HENRY O. LOEBELL, New York, N. Y.
Industrial Fuel Contracts (Sub.) — CHAS. S. SMITH Philadelphia, Pa.
Customer Service—J. B. Myers, Philadelphia, Pa.
Merchandising—H. J. LONG, New Brunswick, N. J.
Nominating Committee—J. D. SHATTUCK, Chester, Pa.
Program—F. J. RUTLEDGE, Philadelphia, Pa.
Rate Structure—J. D. SHATTUCK, Chester, Pa.

A New Industrial Fuel Engineer

MR. EHLERS has severed his connection as Industrial Fuel Engineer from the American Gas Association. He came into his position with us at the birth of this Organization from long and steadfast service in the N. C. G. A. He is now with the Johns-Manville Co. We wish him every success.

Mr. Ehlers has been succeeded by Mr. N. T. Sellman, of the Consolidated Gas Company, a graduate Mechanical Engineer of Stevens Institute. He was employed by the Utilization Department of the Consolidated Gas Company in 1913 as Assistant Staff Engineer. Later he became one of the Staff Engineers of the Department. During the war he began his army service as a private in the Artillery. He later served a year and a half in the American Expeditionary Forces as First Lieutenant in the Gas Defence Service.

Is the Sales Department Responsible for this Amazing Growth of Gas Sales

THE accompanying graphic conveys a vivid picture of the growth of the gas business during the past twenty years.

A remarkable feature of this chart is the fact that notwithstanding the period of business depression which occurred about the time of the 1907 panic the gas business in comparison with other industries was affected insofar as gas sales were concerned to an inappreciable extent.

We have in this fact a most effective argument to present to those who claim that the gas industry is going backward. The steady and consistent growth shown by this graphic should be most effective in convincing the investor that his money could be placed to no better advantage or with more assurance of long time safety and return than if invested in gas company stock, bonds or notes.

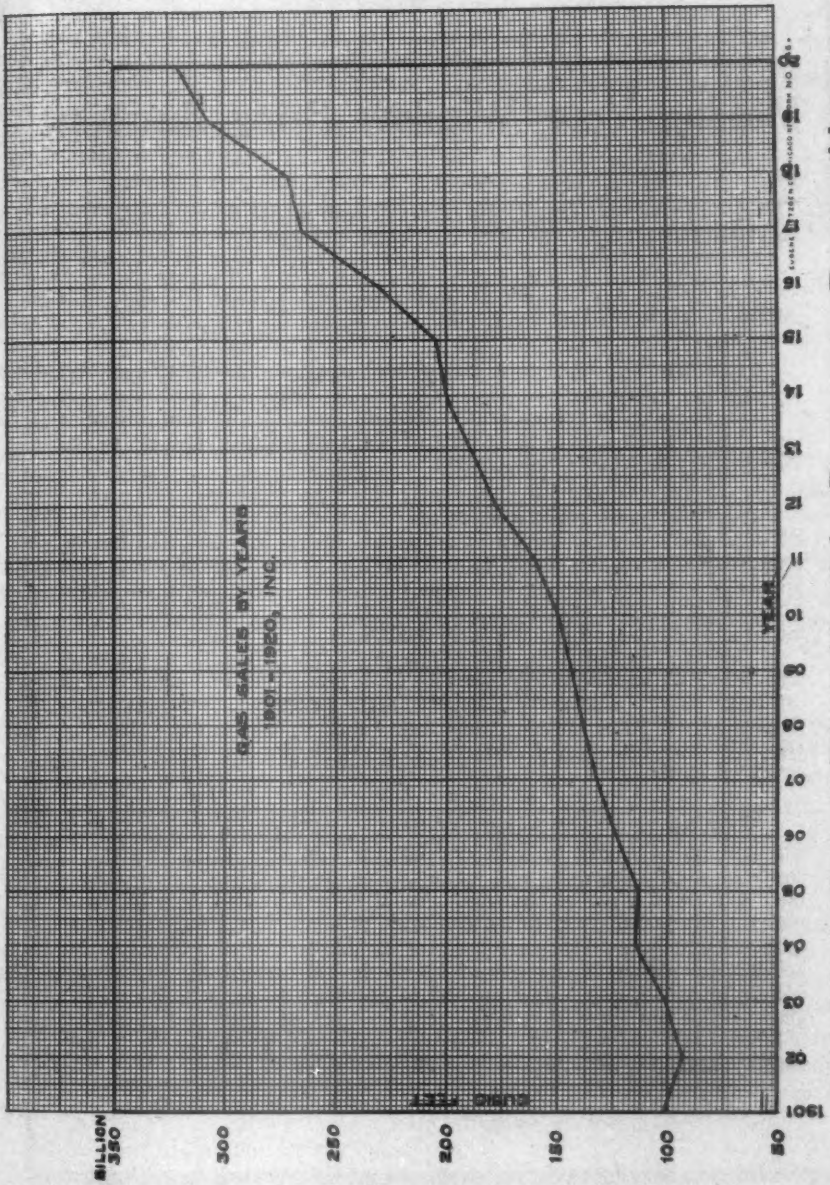
Now where does the Commercial or Sales Department come in when we make an analysis of the contributing causes of this prosperity. While, of course, it cannot be denied that much of this growth can be traced to the natural growth of all communities and the ever increasing demands of industry requiring gas in large volume, nevertheless it can hardly be denied that the aggressive and consistent effort of the Sales Department, coupled with the influence of good advertising, had much to do with these results. Industry would hardly have turned to gas as the source of energy for the many heating operations required had it not been for the untiring efforts of the trained industrial salesmen, of which, unfortunately, we have so few in our industry to-day; nor would the public have turned to the general use of gas in the home were it not for the steady plugging of the sales representatives.

Is this not a convincing argument for the contention that the gas company sales organization should be a permanent branch of the company's business, given encouragement in every way possible and urged to extend its activities to the utmost. The sales representative is largely responsible for the good or ill will of the customer,—eliminate him in times of stress and the public quickly loses interest even in such an essential commodity as gas and turns a ready ear to our competitors, thus making it doubly hard to regain what has been lost.

Has the experience of the past year or two taught us anything in this regard?

Gas Sales by Years, 1901-1920 Inclusive, Compiled from Brown's Directory of Gas Companies

1901	101,625,366,000	cubic feet
1902	92,714,667,000	" "
1903	105,676,479,000	" "
1904	113,930,140,000	" "
1905	112,444,237,000	" "
1906	122,849,725,000	" "
1907	132,011,582,000	" "
1908	138,570,073,000	" "
1909	143,117,693,000	" "
1910	149,430,549,000	" "
1911	159,100,674,000	" "
1912	178,228,754,000	" "
1913	188,285,840,000	" "
1914	198,838,834,000	" "
1915	204,309,522,000	" "
1916	231,381,313,000	" "
1917	264,493,003,000	" "
1918	271,593,141,000	" "
1919	306,632,786,000	" "
1920	319,887,813,000	" "



For How Much of This is the Sales Department Responsible?

Making Your Window Bring Business

THE best sermon preached to a blank wall would do no good. The bigger its audience the greater its chance of getting results.

The greater the number of people who see a window display, the greater its chances of selling goods.

An amount of money, of energy and work and a valuable section of floor space have been devoted to a window display. Surely it is not scientific to leave the utilization of all of this valuable material to chance —to depend upon the casual passing of a chance prospect and his casual glance in the direction of the display.

Advertise your window displays. Even though it is chance that leads a man to read an ad, two chances are better than one, and having read your statement in the "Journal" or the "News" to the effect that you have a special display of lamps or industrial appliances on Main Street, he will stop to notice your window as he passes. He may even go out of his way to see what you have to show.

The same story told by two witnesses in court strengthens the case. The telling of an advertising story by both newspaper and window has the same effect. The very difference in their methods of expression—th printed word and "picture" language—adds to the results. Back up your window displays with advertising in newspaper and by circular, or street-car card.

Then, **use** your advertising. You would not think of turning a salesman out into the city to shift entirely for himself. Why turn out a costly piece of advertising and make no definite use of it? Every commercial man in a gas organization should be required to keep in touch with the window displays of his company, to know what goods are being featured and how. Not only may he be able to give the display man pointers on the convincingness of his work, but first of all, he himself will be provided with a new method of approach to a prospect and the management can know that every possible atom of value in the display is being made use of. All advertising—or broader still—all selling methods should work together to produce sales.

MANUFACTURERS SECTION

GEO. S. BARROWS, Chairman — JOHN S. DeHART, Jr., Vice-Chairman

PERCY H. HALL, Secretary

MANAGING COMMITTEE—1921

At Large

BARROWS, GEORGE S., Providence, R. I.
BRUCE, HOWARD, Baltimore, Md.
CONROY, J. P., New York, N. Y.
CRANE, WM. M., New York, N. Y.
DEHART, JR., J. S., Newark, N. J.
GRIBBEL, W. GRIFFIN, Philadelphia, Pa.
KOPPER, W. B., Brooklyn, N. Y.
KNAPP, F. H., Pittsburgh, Pa.
LEMKE, F. A., Kalamazoo, Mich.
LOHMEYER, H. B., New York, N. Y.
LONG, H. J., New Brunswick, N. J.
MCDONALD, DONALD, New York, N. Y.
MUELLER, ROBERT, Decatur, Ill.
NORTON, H. A., Boston, Mass.
ROPER, GEORGE D., Rockford, Ill.
SHERWOOD, J. M., New York, N. Y.
STITES, TOWNSEND, Gloucester, N. J.

Representing Affiliated Societies

BABCOCK, C. B., San Francisco, Calif. (Pacific Coast)
BARTLETT, C. E., Philadelphia, Pa. (Pennsylvania)
CHAPIN, C. H. B., New York, N. Y. (Empire State)
ECCLES, GEO. W., Waltham, Mass. (N. E. Gas Eng.)
GIBSON, W. R., Toronto, Can. (Canadian)
KELSEY, L. D., Brookfield, Mo. (Missouri)
LONG, H. J., New Brunswick, N. J. (New Jersey)
MCCULLOUGH, CHAS., Milwaukee, Wis. (Wisconsin)
MILLER, THOS. D., Detroit, Mich. (Illinois)
ROPER, GEORGE D., Rockford, Ill. (Iowa Dist.)
SEIDENGLANZ, C. H., Dallas, Tex. (So. Central)
SCHALL, H. D., Detroit, Mich. (Michigan)
SPARKS, F. P., Chattanooga, Tenn. (Southern)
WARREN, W. M., St. Louis, Mo. (Iowa Dist.)
WESTON, J. A., Lansing, Mich. (Indiana)

Our prosperity is dependent upon the prosperity of those producing the gas utilized by our appliances—our interests are in common.

Let Every Manufacturer Be There

THE stage is now set for the most evident of the many activities of the Manufacturers' Section; the exhibit to be held during the annual meeting of the Association in Chicago.

It is readily seen that this year's exhibit will compare favorably with the previous exhibits and because of the great interest shown by our progressive and aggressive western members we are certain that the quality and attractiveness of both the individual exhibits and the exhibition, as a whole, will be well in keeping with what has been done in the past.

While the exhibition is the most evident sign of activity of the Manufacturers, the Section has been active in keeping closely in touch with developments in our industry in which manufacturers of all classes of goods are interested. These activities will be referred to in the Address of the Chairman.

The interest which the Manufacturers are taking in the development of the gas business will be shown by the fortunate culmination of their efforts to have a speaker of national prominance address the Association on matters of interest, not only to the manufacturers but to the companies as well.

Annual Meeting of the Manufacturers Section

George S. Barrows, Chairman, presiding

Address of Chairman

Report of Secretary

Report of Nominating Committee

Election of Chairman and Vice-Chairman

Introduction of New Officers

New Business

Adjournment

It is hoped that every manufacturer member and every delegate will be present at this meeting on Monday, November 7, at 10:30 in the Gold Room of the Congress Hotel.

Neither can you afford to miss the address which Mr. Charles Coolidge Parlin will present at the General Meeting on Wednesday in the interest of manufacturers on "Merchandising Problems of the Gas Industry."

Come to Chicago!

Wanted—A Trade Mark Name

THE Scott Gas Appliance Company, Inc., wants a trade mark name for its new line of gas ranges to be exhibited at the A. G. A. convention in Chicago in Booth 17 of the Congress Hotel and announced a first prize of a white enamel Scott gas range valued at $200.00 and a second prize of $100.00 in gold for the two best names selected by the judges.

The contest is now open to everyone in the gas industry and closes November 11th. Those interested can obtain suggestion blanks by addressing the Scott Gas Appliance Company, Inc., Bond Building, Washington, D. C.

TECHNICAL SECTION

R. B. HARPER, Chairman — H. R. COOK, Jr., Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE — 1921

At Large

CHUBB, C. N., Davenport, Iowa
CLARK, JOHN A., JR., Newark, N. J.
FIELDNER, A. C., Pittsburgh, Pa.
FORSTALL, WALTON, Philadelphia, Pa.
FULWEILER, W. H., Philadelphia, Pa.
LUNN, C. A., New York, N. Y.
MACBETH, G. T., Mt. Vernon, N. Y.
MEYERHERM, C. F., New York, N. Y.
MORHOUS, O. A., Astoria, N. Y.
NORMAN, O. E., Chicago, Ill.
SPERR, F. W., Pittsburgh, Pa.
TAUSSIG, J. H., Philadelphia, Pa.
TUTWILER, C. C., West Conshohocken, Pa.
VINCENT, G. I., Syracuse, N. Y.
WARNER, A. W., Chester, Pa.
WEBER, F. C., New York, N. Y.
WHITE, PROF. A. H., Ann Arbor, Mich.
WILLIEN, L. J., Boston, Mass.

Representing Affiliated Societies

BROWN, J. A., Jackson, Mich. (Michigan)
CHAPIN, C. H. B., New York, N. Y. (Empire State G. & E.)
CHUBB, C. N., Davenport, Ia. (Iowa)
CORNISH, R. C., Philadelphia, Pa. (Pennsylvania)
ELBERT, V. L., St. Joseph, Mo. (Missouri)
FERRIER, JAMES, Atlanta, Ga. (Southern Gas)
HART, J. G., Waukegan, Ill. (Illinois)
HUMPHREYS, J. J., Montreal, Canada. (Canadian)
JOHNSON, G. M., South Bend, Ind. (Indiana)
JONES, JACOB B., Bridgeton, N. J. (New Jersey)
LYONS, B. F., Beloit, Wis. (Wisconsin)
PAIGE, C. E., Worcester, Mass. (N. E. Gas Eng.)
PAPST, H. M., Portland, Ore. (Pacific Coast Gas)
SEDBERRY, W. H., Marshall, Tex. (South Central)

CHAIRMAN OF SECTION COMMITTEES ORGANIZED TO DATE

Carbonization—J. H. TAUSSIG, Philadelphia, Pa.
Cast Iron Pipe Standards—WALTON FORSTALL, Philadelphia, Pa.
Chemical—C. A. LUNN, New York, N. Y.
Complete Gasification of Coal—A. W. WARNER, Chester, Pa.
Consumers Meters—JOHN A. CLARK, JR., New York, N. Y.
Cooperative Investigation of Gases—D. W. CHAPMAN, Chicago, Ill.
Disposal of Waste from Gas Plants—F. W. SPERR, Pittsburgh, Pa.
Electrolysis—CHAS. F. MEYERHERM, New York, N. Y.
Gas Coal Specifications—PROF. A. H. WHITE, Ann Arbor, Mich.
Gas Oil—W. H. FULWEILER, Philadelphia, Pa.
Increasing Distribution Capacity—C. N. CHUBB, Davenport, Ia.
Nominating Committee—L. R. DUTTON, Jenkintown, Pa.
Refractory Materials—W. H. FULWEILER, Philadelphia, Pa.
Gas Pipe and Meter Deposits—O. A. MORHOUS Astoria, N. Y.
Nomenclature—O. E. NORMAN, Chicago, Ill.
Nominating Committee—L. R. DUTTON, Jenkinstown, Pa.
Purification—A. C. FIELDNER, Pittsburgh, Pa.

Order Your Advance Papers Before the Convention!

BY the time this MONTHLY has gone to press you will probably have received several notices through the Service Letters of the Convention Papers. Authors of papers and committee chairmen have gone to considerable trouble in order to present their material in time for advance printing and it is hoped that members will avail themselves of the opportunity to secure and read the convention reports and papers as soon as they are announced as ready for distribution.

In this connection we wish to call the attention of Technical Section members particularly to the fact that all papers and reports will be presented before the Technical sessions in *abstract form only*. It is, therefore, doubly important that members read the full text of advance papers before going to the Convention so that they may be able to follow more intelligently the abstracts as presented and discuss fully any detail which the author may not be able to cover in his abstract presentation.

Presentation in abstract form was decided upon in order to secure more time for *discussion* and the discussion secured will in turn depend largely on a careful reading of the full text before the meeting. If you are going to Chicago, don't forget to order your advance papers as they are announced.

Report On Water-Gas Tar*

W. H. FULWEILER

Production.—Out of 917 plants ennating gas about 596 manufacture cargaged in the manufacture of laumburetted water gas, which milkes up about 70 per cent of the volume of illuminating gas produced.

While about 51 per cent of the number of plants are located along the eastern coast, and about 35 per cent in the Mississippi Valley, yet somewhat over 67 per cent of the gas is manufactured by the plants along the Atlantic coast.

Table 1 gives the production of carburetted water gas, the quantity of oil used, the estimated quantity of water-gas tar produced.

Figures for water-gas tar produced that were obtained in connection with a survey of the gas oil requirements in the United States by a committee of the American Gas Association indicate that at least during the last 2 or 3 years between 70 per cent and 80 per cent of the tar produced is utilized so that for the years 1918, 1919 and 1920, the utilized or available production will be approximately: in 1918, 70,000,000 gals.; in 1919, 75,000,000 gals., and for 1920, 80,000,000 gallons. The figures given in "Mineral Resources for 1918" show only 53,420,000 gallons. This apparently refers to tar sold.

The increase in tar marketed is probably due to the fact that the fuel value of the material has become more widely recognized, as it has been found that water-gas tar can be burned with the same installation as fuel oil and with slightly higher efficiency. This has resulted in a very great increase in the value of the material so that to-day its market value appears to be from 15 per cent to 20 per cent higher than coal tar.

While there is a tendency to reduce the consumption of gas oil, due to its present scarcity and high price, yet owing to the many advantages that the manufacture of carburetted water gas possesses the production of water-gas tar will continue at about its present rate for a number of years.

Physical and Chemical Characteristics.—For the purpose of this discussion we may consider 3 distinct tars: tar produced by the destructive distillation of coal, which we will call "coal tar;" tar produced by what may be called the destructive distillation of natural hydrocarbons (petroleum) in its own products of decomposition, which we will call "oil tar;" and tar produced by the destructive distillation of oil in the presence of a mixture of hydrogen or hydrogen and carbon monoxide and water vapor, known as blue gas, which we will call "water-gas tar."

The resulting tars from these 3 processes are the summation of all of the manifold and complicated reactions which may take place as the result of heating a mixture of hydrocarbons (as we may consider coal a mixture of hydrocarbons) to high temperatures.

The physical and chemical qualities of the tars reflect quite accurately the variations in the fundamental factors which govern all reactions, that is, pressure, temperature, time of contact, concentration, and the presence of catalytic substances.

*This paper was presented at the Convention of the American Wood Preservers' Association, San Francisco, January 25-27, 1921 as a part of the report of Committee No. 4—Preservatives.

In connection with the tables giving analyses of tars it must be remembered that this material is somewhat variable in its composition and that an analysis can only represent the particular sample tested. However, the analyses given are fairly representative of materials available at the date of this report.

Table 2 gives analyses of samples of horizontal, vertical and coke-oven coal tars and water-gas tar.

Table 3 gives the analyses of samples of coal-tar creosote, water-gas tar creosote and Mexican crude oil.

Table 4 gives the analyses of some water-gas tars made from different oils and under different manufacturing conditions, which show the probable range in composition that may be expected.

It will be noted that for a given boiling point the gravities and refractive indices in the water-gas tar are lower than in coal tar, and the gravities of the oil tar are in turn lower than in the water-gas tar.

Qualities of Water-Gas Tar as Affecting its Preservative Quality.—It would seem that there are 4 fundamental qualities that affect the value of any material for its use as a wood preservative. These are penetrance, or the ability to get the material into the wood; permanence, or its ability to stay in the wood; waterproofing effect, and toxicity.

It appears from the work of E. Bateman[1] that penetrance bears some close relation to the absolute viscosity of the material at the temperature employed in the treating process.

Another factor that may be of importance is surface tension. Table 5 gives a number of determinations of absolute viscosity and surface tension at 2 temperatures of a number of samples of commercial materials.

As a result of practical experience it has been found that water-gas tar derivatives whether refined tar, distillates or mixtures, appear to give very satisfactory penetration. In fact, it is possible to secure very complete penetration of wood blocks with refined water-gas tar having a gravity of 1.14 and a specific viscosity as high as 2.4 at 100° C., and a very considerable yardage of wood block has been laid with such material.

The permanency of the material in the wood will probably be affected by 3 factors—evaporation of the material, leeching, and changes in the chemical composition. As it will be noted from the comparative analyses of water-gas tar and coal tar, that with 2 fractions of same gravities, the boiling point of the water-gas tar will be considerably higher than the corresponding coal tar, so that it is to be expected that the loss in evaporation which depends upon vapor tension should be slightly lower with water-gas-tar oil than with coal-tar oils of the same gravity. Laboratory tests have in general confirmed this.

Table 6 gives some analyses of material extracted from wood blocks and railroad ties that have been in service from 4 years to 10 years.

It is hardly within the province of this report to discuss the validity of the laboratory petri-dish test for toxicity as affecting the practical suitability of the material for preservation purposes. The

1. "Relation Between Viscosity and Penetrance of Creosote into Wood," by E. Bateman, *Chem. & Met. Eng.* Vol. 22, No. 8 (1920).

work of Dean & Downs,[2] Weiss[3] and Humphrey & Fleming[4] on this subject are well known and are given in Table 7. The summation of the results that have been reported appear to indicate at least with the lower gravity water-gas tar distillate that the amount of creosote that is used per cubic foot in commercial practice is in excess of that required to inhibit the growth of fungi.

Many factors that cannot be duplicated in the laboratory appear to enter into the question of inhibiting the growth of wood-destroying fungi under practical conditions so that the petri-dish test, while valid for the particular conditions may be of little value in determining the practical suitability for commercial use.

Practical experience with authenticated samples of water-gas tar have shown that, for instance, in wood block, no decay has taken place in 12 years, and in railroad ties no decay has taken place in 10 years, and it is believed that these practical tests are much more indicative of the suitability of the material than the petri-dish tests before mentioned.

Adaptability to Use in Wood-Preserving Process.—Water-gas tar products have been used commercially in the full-cell, Rueping and Card processes with entirely satisfactory operating results.

In some of the earlier work it was attempted to duplicate the gravity of the coal-tar creosote by using high-gravity water-gas-tar distillates. This required a distillation to coke in order to secure the high gravities. Later it was found more advantageous to use mixtures of refined water-gas tar and lower-gravity distillate oil. In Table 8 are given some analyses of water-gas-tar distillates that have been used commercially, principally in the treatment of railroad ties and cross-arms.

In the full-cell process for wood block, refined tars having gravities as high as 1.14 have given satisfactory penetration. Some typical analyses of such material are given in Table 9.

For railroad ties, the best results with both the full-cell and Rueping processes have been obtained with a mixture of about equal parts of refined tar and distillate so that the gravity of the mixture was from 1.04 to 1.07 at 38° C. In this manner, any advantage that may accrue with a higher toxicity of the lighter oils is secured together with the very high penetration, and at the same time the very complete waterproofing effect of the refined tar is secured. Some typical analyses of this material are shown in Table 10.

In the Card process, where the wood is treated with a mixture of the oil and zinc chloride solution, some unsatisfactory results have been obtained where crude water-gas tar was used. This resulted in the deposition of a heavy black sediment that collected on the surface of the treated material, making it very disagreeable to handle, and also collected in the bottom of the retorts and working tank. Such precipitation, however, is not noticed in properly prepared and refined water-gas-tar products.

It is advantageous to hold the percentage of heavy hydrocarbons, that is, those boiling above 355° C., to less than 40 per cent, and in order to obtain this figure a mixture of distillate oil and refined tar

2. Dean, A. L., and Downs, C. R., "Antiseptic Tests of Wood-Preserving Oils," *8 Int. Cong. Appl. Chem.*, V. 1 13 sec. 6a, page 103.
3. Weiss, J. M., "The Action of Oils and Tars in Preventing Mould Growth," *J. Soc. Chem. Ind.*, Vol. 30 pages 190 and 1348 (1911).
4. Humphrey, C. J., and Fleming, R. M., "The Toxicity to Fungi of Various Oils and Salts, Particularly Those Used in Wood-Preserving." *Bulletin No. 227*, U. T. Dept. of Agriculture.

TABLE 1

Year	Carburetted water gas made	Gas oil used	Estimated water-gas tar produced
	M cu. ft.	Gallons	Gallons
1915	136,333,000	553,238,000	83,000,000
1918	191,741,000	703,823,000	111,000,000
1919	194,217,000	709,327,000	111,500,000
1920 (Estimated)	214,217,000	769,607,000	115,500,000

TABLE 2.

	Horizontal	Vertical	Coke oven	Water-gas tar
Specific gravity at 38° C.	1.2357	1.1300	1.1700	1.1010
Free carbon (% weight)	28.6	5.5	5.5	2.0
Tar acids (% volume)	5.4	13.2	6.0	None
Naphthalene (pound)	0.82	0.12	0.35	.....
Distillation (% weight):				
210° C.	0.5	7.5	0.1	3.0
235° C.	4.8	17.5	3.7	14.0
315° C.	20.9	39.0	33.0	42.0
355° C.	28.1	50.2	45.3	55.0
Coke (% weight)	44.9	23.2	22.4	24.1
Sp. gr., 235° C.-315° C. fraction	1.0377	1.0010	1.0320	1.001
Sp. gr., 315° C.-355° C. fraction	1.1051	1.061	1.1060	1.05
Unsulphonated material (% weight)	0.4	2.3	0.2	3.1

Table 3 to Table 17 are omitted only for lack of space. They contain extremely valuable data to anyone interested in the subject of wood preservation. Full copy of this paper containing all tables can be secured by application to the American Wood Preservers Association, Baltimore, Md.

is usually required. Representative analyses of material that have given very satisfactory results are shown in Table 11.

Extent of Use.—The amount of water-gas tar reported to the United States Forest Service as used in wood-preserving is somewhat low, as the amount sold by one company alone has exceeded the published figures. This may be due, however, to the inclusion of a certain amount of water-gas tar in the paving oil reported. Table 12 gives the figures as they have been reported since 1915.

The water-gas tar derivatives have been used in practically every branch of the wood-preserving industry. Its authenticated commercial use in treatment of railroad ties began in 1910, when the Public Service Railway Company of New Jersey began to use it in a regular 10-lb. treatment on their ties. They probably have in track 500,000 ties treated with water-gas tar.

Its use by steam roads began in 1914, when one of our larger railroads began to use it. Since then water-gas tar has been used by the Baltimore & Ohio, Chicago, Burlington & Quincy, Pennsylvania, and the Philadelphia & Reading railroads. The Baltimore & Ohio and the Chicago, Burlington & Quincy railroads have used water-gas tar in the Card process, the Philadelphia & Reading and the Pennsylvania have used it in the full-cell and Rueping processes.

The Baltimore & Ohio has treated approximately 5,000,000 cross-ties with the Card process, using ½-lb. zinc chloride with 3 lbs. water-gas tar.

The Chicago, Burlington & Quincy has treated about 171,000 ties with water-gas tar and zinc chloride solution.

The Philadelphia & Reading and the Pennsylvania railroads have used water-gas tar in admixtures with coal-tar products in varying percentages from 10 per cent up to straight water-gas tar.

In wood-block paving very considerable quantities of water-gas tar have been used, either alone or with a mixture of coal tar that for commercial reasons have not been reported as such.

The authenticated use of the material commenced in 1907, and a very considerable yardage of wood block has been laid by the Barber Asphalt Company, which was treated with refined water-gas tar.

The details of the paving laid with water-gas-tar treated wood blocks are given in Table 13. In addition to the yardage given, there is probably an equal yardage that could not be reported.

Specifications—A number of specifications have been in commercial use for the purchase of water-tar products. These covered several qualities of refined tar, distillates, and mixtures of distillates and refined tar. These specifications are given in Table 17.

Summary

There exists, and will continue to exist, for a number of years, a large amount of water-gas tar that could serve as a potential source of preservative oil.

Water-gas tar is in general composed of the same aromatic hydro-carbons as coal tar, but it does not contain phenoloid bodies, and only contains traces of nitrogen bases.

Water-gas-tar products have been found satisfactory in commercial practice in their ability to penetrate wood, to remain in wood, to render it waterproof, and to prevent decay.

Practical experience indicates that water-gas-tar products can be used satisfactorily in the full-cell, Rueping and Card processes.

During the last 13 years railroad ties, wood-paving blocks, timber for docks, cross-arms, and fence posts treated with water-gas tar have been in satisfactory and successful use.

Experience With "B" Bell For Cast Iron Pipe

To the Members of the Association:

Your Committee on Cast Iron Pipe Standards has been asked to report to the November meeting, any experiences, up to date, with the "B" bell for cast iron pipe. The Committee has no method of obtaining this information except directly from the person using the bell. If you have used any of these bells and will promptly supply me with the information called for below, the Committee will be able to comply with the request of the Association.

WALTON FORSTALL,
Chairman.

Name of Company .....
Size of pipe..... Length of line..... Kind of joint.....
Date ..... No. of leaking joints to date .....
Remarks:

Responsibility for Damage Caused by Leaking Electric Current

THE question of responsibility for damage resulting from electrolysis or the action of electric current on gas or water pipes that has strayed or "leaked" from the lines of electric railroads is of great interest to many of our members. The Association has secured a number of reprints of a pamphlet prepared by Samuel S. Wyer, Consulting Engineer of Columbus, Ohio, which lists a large number of adjudicated cases establishing the responsibilitiy for damages from leaks of water gas or oil and under each case a "stray current analogy" showing what would have been said had the same line of legal reasoning been applied to stray electric current.

The pamphlet is prefaced by a chapter on fundamental principles, a justification of the analogy used, and the equity of requiring electric railroads to use their property so as not to injure the property of others. A concluding section outlines the various hazards and property damage resulting from electrolysis. As but a limited supply of this pamphlet is on hand, members desiring a copy should send their order promptly to Association Headquarters.

Our members will also be interested in the following extract from an opinion of counsel which was recently furnished a natural gas company on this subject:

"Without going into an exhaustive citation of authorities, we believe that the following principles are well settled.

"1. There is doubt as to whether the street railway company would be liable generally in the absence of negligence. We are firmly of the opinion that another utility using the street could not obtain injunctive relief without proving negligence.

"2. While a street railway company has the unqualified right to use the highways with its tracks, wires and cars, it is liable for any negligent construction or negligent use of its facilities. Now negligence is an absence of due care under the circumstances. This means that if there is an appliance or system known, recognized and used, that will prevent or materially minimize the damage done by escaping current, through reducing the amount that escapes, the failure of a company to take such reasonable precautions and make use of such practical appliances is negligence.

"3. The primary burden to furnish and apply the remedy is on the street railway company. All of the cases that we have examined imply this principle. Whenever a Court has refused to grant relief against a power company for damage from escaping current it has assigned some reason why the general rule should not be applied. If the railway company is guilty of negligence there can be no doubt that it is primarily liable for all damage which is the proximate result of such failure to use due care.

"4. Having particular reference to the relation of a natural gas company to a street railway company occupying the same territory, we would deem it unwise and hazardous for the natural gas company to fail to adopt precautions on its own part which would prevent or reduce the damage.

"Courts of Equity are not obliged to grant relief even though there has been a wrong and a Court will not grant relief when the complainant is not making a reasonable effort to avoid the consequences of the conditions complained of.

"Each must have consideration for the other and if they do not the Courts will not protect them. (Opinion cites Delahunt vs. U. T. & T. Co., 215 Pa. 241, and Cumberland T. & T. Co. vs. Rwy. Co., 42 Fed. Rep. 273, and proceeds.)

"The premises would be very different between a natural gas or water company and a street railway company. For there the railway company uses the pipe of the gas and

water company for a part of its circuit and does an actual physical damage to the property of these companies. It is not an interference between two persons having an equal right to use a common way or natural medium, but a trespass by the railway company on the property of the water or gas company.

"This leads us back to our original statement. We do not urge the duty of a gas company to use protective measures because it is primarily liable, but because we understand that even if the railway company does use due care that some current may escape or things occur both with and without the negligence of the railway company which will cause the current to seek the lines of the gas or water company and this may in turn do damage to the companies' patrons and others.

"It should be considered that there is a bigger question than the relative rights of the different utilities. There is the larger question of danger to the public. As between telephone or gas companies on one hand and street railways on the other, there may be many things to shift the responsibility, but if the question is raised between a private individual and the street railway company all this opportunity for shifting will disappear and the Courts will protect the private individual in the enjoyment of his property."

Tightness of Cement Joints

For the benefit of any who may have read the paper "Leakage of Natural Gas," delivered by H. D. Hancock before the Cincinnati convention of the Natural Gas Association, and who might not see the letter regarding this paper addressed by the writer to the *Gas Age*, a copy of this letter is reproduced below:

June 7, 1921.

The Gas Age.

Gentlemen:

I note the following on page 413 of the May 25th *Gas Age*, from a paper entitled "Leakage of Natural Gas," as delivered by H. D. Hancock before the Cincinnati convention of the Natural Gas Association:

> "It has been concluded, however, based upon the results of special leakage investigations in both artificial and natural gas distributing systems, that the use of cement joints in cast iron mains was not justified by the service which has been secured. The use of bell and spigot pipe, however, is often made advisable by various circumstances, and in such cases, the cast lead joint has been selected and, when properly installed, has given highly satisfactory service."

It is very much to be regretted that because Mr. Hancock has found a great many leaking cement joints, he has assumed that cement joints for cast iron pipe are not reliable, and, therefore, announces his preference for the cast lead joint. You will note that he says, in reference to this joint, "when properly installed." Is it possible that he has not heard of the entirely satisfactory experience of many cities, including Philadelphia, with cement joints, an experience covering probably a thousand miles of pipe? If he has heard of this experience, what is his reason for believing that the failures in cement joints he has noted are inherent defects of the joint itself, and are not due entirely to poor installation. It is a matter of common knowledge that the distribution methods in general of the natural gas companies in past years left very much to be desired.

If any of Mr. Hancock's hearers at the Natural Gas meeting who are now using cement joints, should change their practice to cast lead as a result of his paper, especially in any situation where there is trouble from electrolysis, then the cost to them of attending the Natural Gas convention will be far more than they now believe.

Yours truly,

Walton Forstall

Recent Articles in Chemical Press of Interest to Gas Men

Contributed by Sub-Committee on Abstracts* of the Chemical Committee

CRITICAL STUDY OF METHODS FOR THE DETERMINATION OF SMALL QUANTITIES OF CARBON MONOXIDE IN THE AIR AND IN SMOKE. By Daniel Florentin and H. Vandenberghe, *Compt. rend., 172,* 391-3 (1921). For the determination of CO when 2 per cent or more of the gas is present, absorption with ammoniacal Cu_2Cl_2 gives satisfactory results. For smaller quantities, the best methods are (1) oxidation by means of I_2O_5 or (2) measurement of the volume of gas required to bring out the characteristic absorption bands produced by the action of CO on the hemoglobin of blood. The various precautions necessary in the former method are discussed and the sources of error are pointed out. The conclusion is drawn that the most reliable method depends upon the use of blood as indicated by Ogier and Kohn-Abrest (C. A. 2, 2662). (E. C. Uhlig).

BOTH CARBON DIOXIDE AND COMBUSTIBLE GASES IN FLUE SHOULD BE WATCHED. By Olof Rodhe, *Elec. World, 77,* 712-3 (1921). (E. C. Uhlig).

SIMPLEX WATER-GAS PLANT AT BUDLEIGH SALTERTON. By J. W. Givson, *Gas World, 74,* 163 (1921); *Gas Jour., 153,* 543 (1921); *cf. C. A., 14,* 612. For the year 1920 the average make of gas per ton of coal was 18512 cu. ft.; during January of 1921, 19300 cu. ft. A saving of 33 per cent in coal was made. The blue gas is 340 B. t. u. and analysis CO_2 and H_2S 4.9 per cent, O_2 0.2, unsaturated hydrocarbons 0.4, CO 48.0, CH_4 7.5, H_2 33.7, N_2 5.3. Gas tar is used for enrichment, approximately 75 per cent of that used being recovered as dehydrated tar. The mixed coal and blue gas (40 per cent) gives 460 B. t. u. The fuel consumption is approximately 35 pounds per 1000 cu. ft. of gas. The make of gas per ton of coke is approximately 65000 cu. ft. The average cost of production of the water gas for 1920 was 1s. 1¼d. per 1000 cu. ft. (E. C. Uhlig).

EVALUATING WATER GAS FUELS. By Edw. F. Pohlman, *Gas Record, 19, No. 6,* 39-40 (1921). P. establishes a basis for comparing the relative values of generator fuels by using an average analysis and an empirical formula based upon known qualifications of good generator fuel and average operating results for a certain definite period of time (a year). The factors considered are: (1) per cent fixed C. deficiency = 100—per cent C; (2) per cent fuel consumption for evaporation of moisture = 8 x per cent of moisture; (3) per cent fuel unrecoverable in clinkers = 20 x per cent of ash; (4) per cent fuel loss due to effect of ash and cleaning time = 1.16 x per cent of ash; (5) credit due to release of volatile matter = ⅓ of the volatile matter. Thus the relative value of a generator fuel analyzing, moisture 1.8 per cent, volatile matter 3.55, fixed C 88.13, and ash 6.44 = — 11.87 — 0.13 — 1.33 — 7.70 + 1.18 = 19.85 or 80.15 per cent. Then the amount of x fuel required to make 1000 cu. ft. of gas = required amount of the standard fuel x its relative value/the relative value of x. Figures thus obtained agree very closely with those obtained in actual practice. (E. C. Uhlig).

THE WATER-VAPOR CONTENT OF TECHNICAL GASES. By G. Sailer, *Feurungstechnik 9,* 88-9, (1921).—S. discusses the method of calculating the H_2O vapor content of tech. gases of 1 cc. or in vol.—per cent also the effect of the H_2O content upon the energy value of the gases. He points out that it is impossible to compare 2 gases without knowing the H_2O content, which is often not given in the original analysis. (E. C. Uhlig).

ASSAY OF COAL FOR CARBONIZATION PURPOSES. By T. Gray and J. G. King, *Iron and Coal Trades Rev. 102,* 362 (1921). In Technical Paper No. 1 issued by the Fuel Research Board of the Dept. of Scientific and Industrial Research details are given of experimental work in connection with a method of coal assay to ascertain by direct weighing and measurement, and with a precision not hitherto attained, the yields of gas, oil water and carbonaceous residue resulting from the carbonization of coal at definite temperatures. The app. is shown in a cut. (E. C. Uhlig).

RAPID DETERMINATION OF WATER IN TAR EMULSIONS. By W. W. Odell and E. W. Thiele, *Am. Gas Jour., 114,* 252, 257-8 (1921); *Gas Record 19, No. 6,* 29-30 (1921); *Gas Age, 47,* 234-5 (1921).—Aside from the various modifications of the distillation methods, 2 methods have been used to determine water in tar. Brunkow (C. A. 10, 2398) evaporated it in a drying oven, while Kayser used a calcium carbide method. The standard method is that of distillation. In the Barrett Company method 200 cc. of the

*Abstractors names appear in brackets following each item.

emulsion are mixed with 200 cc. of light oils and distilled to 400° F., the water being collected and measured. An accuracy of 0.1 per cent is claimed. There is also a method used in connection with petroleum emulsions by adding to them a light gasoline and centrifuging (Allen and Jacobs, Bur. of Mines, Technical Paper 25). The first of the 2 methods described here is similar in principle. Ten g. of the tar emulsion are weighed into a cream testing bottle (a bottle with a long slender neck graduated in fractional parts of a cc.) and CCl_4 is added up to the top graduation. It is then centrifuged for 2 or 3 minutes at 2000 r. p. m. and the number of divisions read off occupied by the water and the sludge, taking as the upper mark a point half-way between the top and bottom of the upper miniscus. Twice the number of divisions equals the per cent of water by weight, if per cent by volume is desired to take 10 cc. of emulsion instead of 10 g. The method for large amounts of water is accurate within 1 per cent. It is more accurate the smaller the amount of water in the emulsion. Eight determinations can be made and the apparatus cleaned in half an hour. Method 2 depends upon the strong absorbing power of carbon black for the oils of which tars are composed. One hundred g. of the emulsion are weighed into a mortar, and successive small portions of carbon black are added, and mixed well with a spatula until the residue becomes a thick paste and no more water separates. The cc. of water separated is the real water content of the emulsion. By allowing 2 per cent of the per cent of anhydrous tar for the water absorbed by the carbon black, results very close to the true value are obtained. This method is best suited to emulsions of high water content. (E. C. Uhlig).

GRAVIMETRIC ESTIMATION OF CREOSOTE. By A. Lazar, *Gas Journal, 153,* 622 (1921). The approximate creosote content of the tar oil is first determined by the "difference method." An amount of 25 g. of the oil, weighed out exactly to 0.1 g., is extracted 3 times in a separate funnel with the calculated amount of 5 per cent of NaOH solution. The alkaline washings are then extracted twice with ether. The oil-free sodium cresylate solution is decomposed with dilute H_2SO_4 and the pure creosote thus liberated is extracted by 2 or 3 shakings with ether. The combined ether extracts are dried by means of anhydrous Na_2SO_4. A 50 cc. distilling flask, containing a little porous earthenwate, is weighed to 0.1 g. and a dropping-funnel adjusted to a tightly fitting stopper. The dried etherial solution is filtered into the funnel, and the flask warmed on a water bath to drive off the ether. The filter and the funnel are washed with ether and the washings added to the flask. When nothing further distills over, the condenser is removed and a test-tube secured to the outlet tube. The funnel is replaced by a thermometer which dips into the liquid. By heating with a small bunsen flame, the temperature is raised to 50°. The thermometer is then raised to the usual distillation position and the heating continued until the creosote vapors arrive at the bulb of the thermometer. At this point all of the solvent will have been driven off and none of the creosote lost. The flame is removed, the flask allowed to cool and then weighed. The method gives the true content of creosote with great accuracy and permits of the recovery of the greater part of the ether used. (E. C. Uhlig).

AMERICA'S PETROLEUM PROBLEM. By J. O. Lewis, *Jour. Franklin Inst., 191,* 357-79 (1921). An outline is given of the American petroleum industry. The sources of domestic supply and the total crude oil supply of the world are enumerated. In conclusion, an account is given of the various ways in which the domestic supply may be so increased as to meet the growing demand. (E. C. Uhlig).

OIL SHALE IN COLORADO. By R. D. George, *Railroad Red Book, 383,* 457-61 (1921). The Green River shales lie the second from the bottom in the eocene rock series. These shales occur in bands and strata ranging in thickness from a few inches to 75 or 80 feet and differ widely in color, composition, sp. gr., hardness and brittleness. (E. C. Uhlig).

ENRICHMENT OF ARTIFICIAL GAS WITH NATURAL GAS. By Jas. B. Garner, *Jour. Ind. and Eng. Chem., 13,* 58 (1921). (E. C. Uhlig).

BY-PRODUCT COKING. By F. W. Sperr and E. H. Bird, *Jour. Ind. and Eng. Chem., 13,* 26-31 (1921). (E. C. Uhlig).

SOME FACTORS AFFECTING THE SULPHUR CONTENT OF COKE AND GAS IN THE CARBONIZATION OF COAL. By A. R. Powell, *Jour. Ind. and Eng. Chem., 13,* 33-5 (1921). (E. C. Uhlig).

THE DISTRIBUTION OF THE FORMS OF SULPHUR IN THE COAL BED. By H. F. Yancey and Thos. Fraser, *Jour. Ind. and Eng. Chem., 13,* 35-7 (1921). (E. C. Uhlig).

GAS INDUSTRY ON THE HEAT UNIT BASIS. By D. M. Watson, *Gas Journal, 153,* 23-6 (1921). (E. C. Uhlig).

CATALYTIC METHANE FROM BLUE GAS. By

M. Meredith, *Gas Age 47*, 7-8 (1921). (E. C. Uhlig).

CHICAGO TESTS OF WATER GAS. By C. E. Reese, *Gas Age, 47*, 1-6 (1921). (E. C. Uhlig).

LOW TEMPERATURE CARBONIZATION AND ITS APPLICATION TO HIGH OXYGEN COALS. By S. W. Parr and T. E. Layng, *Jour. Ind. and Eng. Chem., 13*, 14-7 (1921). (E. C. Uhlig).

NOTES ON WATER SOFTENING FOR BOILERS. By F. A. Frost, *Gas Journal, 153*, 468-70 (1921). (E. C. Uhlig).

SIX MONTH'S EXPERIENCE WITH A WOODALL-DUCKHAM VERTICAL RETORT INSTALLATION. By W. A. Dearden, *Gas World, 74*, 137-8 (1921). (E. C. Uhlig).

GAS MAKING WITH CHEAP OXYGEN. By E. A. W. Jefferies, *Gas Age, 47*, 145-50 (1921); *Gas Record, 19, No. 5*, 45-55 (1921). (E. C. Uhlig).

COMBINATION COAL AND WATER GAS. By R. Baker, *Gas Age, 47*, 129-31 (1921). (E. C. Uhlig).

CORROSION OF COKE-OVEN WALLS. By A. E. Findley, *Jour. Soc. Chem. Ind., 40*, 7-8T (1921). (E. C. Uhlig).

ROBINSON'S PATENT MIXED-GAS PLANT. Anon., *Gas Journal, 153*, 335 (1921). (E. C. Uhlig).

POSSIBILITIES OF GASEOUS HEATING. By W. N. Booth, *Gas Journal, 153*, 223-7 (1921); *Gas World, 74*, 77-8 (1921). (E. C. Uhlig).

SULPHUR DISTRIBUTION IN CARBONIZATION. By U. O. Hutton and C. C. Thomas, Johns Hopkins Univ., *Gas Age, 47*, 88-94 (1921). (E. C. Uhlig).

BY-PRODUCT OVENS AT WOODWARD (ALA.). By Emil Piron, *Gas Age, 47*, 83-5 (1921). (E. C. Uhlig).

THE 44TH CONGRESS OF THE (FRENCH) TECHNICAL SOCIETY OF GAS. Genie Civil, Vol. LXXIX, No. 1, 12 etseq, July 2, 1921. The meeting was held at Tours from the 14th to 16th of June, 1921, and presided over by M. Ed. Kaeuffer.

The Report of the Committee on Manufacture deals with the English M. G. Helps complete carbonization process, without comment, due to lack of information. The Committee is still occupied with a "Standardization" of mouthpieces for horizontal retorts.

The Report of the Committee for Personal Instruction announces a "Gas Week," in which the program is given.

The Heating of Coke Ovens and Retorts is discussed by M. Godinet, who takes exception to an article by M. Coune of the Belgian Gas Association, giving for modern coke ovens heated by part of the gas produced, 650,000 calories per ton of coal carbonized as compared with 1,045,000 calories for retorts, or 65 per cent more.

Mr. Godinet raises the first figure to 691,000 by correction for 13.2 per cent entrained air, while the figures for retorts is reduced to 863,000 by correction for humidity of coke, carbon in ash and losses due to radiation.

A Small Charger for Retorts is described by M. R. Frere.

Water Jacketed Ascension Pipes at the La-Mouche works, at Lyons, are described by M. Shnurr. A temperature graph is shown of the interior of the pipes throughout a charge. The water jacketed ascension pipe is illustrated. Cooling water enters at 12 to 15 degrees C. and issues at 35 to 40 degrees C. Six or seven liters per minute are used for center pipes and four to five liters per minute for side pipes.

Economizers in Swiss Gas Plants are described by M. Piaton.

1. Per kilogram of coke burned one kilogram 150 of steam at 7 kilograms pressure is produced.
2. Per kilogram of incandescent coke, O kilogram 300 to O kilogram 420 of steam at 7 kilograms pressure or an average of 450 kilograms of steam recovered per ton of coal carbonized.
3. 700 liters of water of 7 degrees C. are heated in economizers by the heat of waste gases and 1350 liters of cooling water heated to 50 degrees.

It is stated further that it is possible to recover per cubic meter of water gas one kilogram 100 of steam at 12 kilograms pressure, 300 degrees superheat, or about the quantity of steam necessary to the generating process.

An Automatic Pressure Regulator for Street Gases is described by M. G. Frere.

A Safety Device For Gas Leaks is described by M. Grebel.

A Communication on Water Gas was read by M. Fourmanoir, in which the Humphreys and Glasgow, and Dellwick-Fleischer apparatus are combined. By means of recuperation in producing the necessary steam the thermal efficiency is increased from 57 to 72 per cent.

Gas Heating by Means of Surface Combustion is described by M. Casson.

The Distillation of Tar in Gas Works is described by Mr. Savignac. The article deals principally with the dehydration of tar.

The Pre-mixing of air for Combustion in Industrial Gas is further described by M. Payet.

Automatic Combustion Control in Boilers is described by M. Frere.

AMERICAN GAS ASSOCIATION, Inc.

Current List No. 47—September, 1921

Rate Changes.

Where information is not secured from company receiving increase, the source of information is noted in brackets. See Cumulative List No. 7, of March, 1921, for explantion of abbreviations. This list includes only increases reported as secured subsequent to June, 1921.

CALIFORNIA

***San Francisco*:** (Increase) Co. reports third increase effective August 1, 1921. New rates apply to the same districts as shown in Cum. List No. 7. San Francisco and Alameda Dist. 1st 10 MCF $1.07—next 20 MCF 96¢—next 40 MCF 90¢—next 80 MCF 85¢—next 150 MCF 80¢—over 300 MCF 75¢ per M. M. M. Chge. Flats and Apts. 4 or more meters 70¢—other than above 80¢.

Sacramento Dist. 1st 5 CCF or less 80¢—next 4.5 CCF $1.32 per M—next 5 MCF $1.15—next 10 MCF $1.00—over 20 MCF 90¢ per M.

Hayward Dist. 1st 5 CCF 80¢—next 4.5 CCF $1.35 per M—next 5 MCF $1.20—next 10 MCF $1.05—next 20 MCF 95¢—over 40 MCF 90¢.

Vallejo Dist. 1st 4 CCF 80¢—next 4.6 CCF $1.55 per M—next 5 MCF $1.20—over 10 MCF $1.00—over 20 MCF 90¢ per M.

San Rafael Dist. 1st 4 CCF 80¢—next 4.6 CCF $1.80 per M—next 5 MCF $1.30—next 10 MCF $1.10—over 20 MCF 95¢ per M.

Chico Dist. 1st 5 CCF $1.00—next 4.5 CCF $1.80 per M—next 5 MCF $1.40—next 10 MCF $1.15—over 20 MCF $1.00 per M.

Colusa Dist. 1st 5 CCF $1.00—next 4.5 CCF $1.85 per M—next 5 MCF $1.50—next 10 MCF $1.20—over 20 MCF $1.10 per M.

San Jose Dist. 1st 5 CCF 80¢—next 4.5 CCF $1.30 per M—next 5 MCF $1.10—next 10 MCF $1.00—over 20 MCF 90¢ per M.

Davis Dist. same as Colusa

Palo Alto City wholesale 1st 5 MCF 62¢, over 5 MCF 40¢ per M.
In addition to above rates 2¢ per M is added for about one year to reimburse Co. for deficit incurred prior to decision.

Rates are subject to increase or decrease for each 10¢ increase or decrease in cost of oil above or below price paid for oil effective on June 1, 1921 in districts respectively per MCF 2¢, 2.4¢, 2.2¢, 2.5¢, 2.5¢, 2.8¢, 2.2¢.

***Santa Barbara*:** (Increase) Co. reports second increase effective July 21, 1921. New rate: 1st 6 CCF $1.00—next 4.4 CCF $1.50 per M—next 15 MCF $1.45—next 30 MCF $1.40, over 50 MCF $1.35 per M—outside of City 1st rate the same added to each following rate respectively 25¢, 20¢, 15¢ and 10¢ per M. Special Commercial Service, city only $1.30 per MCF M. M. Chge. per meter $52.00.
Above rates subject to increase or decrease on the basis of 2.6¢ per M for each 10¢ increase or decrease cost of oil with base cost $2.54 per bbl.

CONNECTICUT

***Hartford*:** Co. reports fourth increase effective Oct. 1, 1921. New rate: minimum bill 50¢—1st CCF 61¢—each additional CCF to 100 MCF 11¢—over 100 MCF 10.2¢ per CCF, discount 1¢ per CCF 10 days. P. P. meters 15¢ per CCF adjusted to regular schedule each four months period.

DISTRICT OF COLUMBIA

***Washington*:** (Decrease) Co. reports reduction effective Sept. 18, 1921. New rate: 1st 50 MCF $1.10 per M—next 150 MCF $1.05—next 300 MCF $1.00—next 300 MCF 95¢—over 800 MCF 90¢ per M. Penalty 10¢ per M 10 days. Beginning March 18, 1922, rate to be automatically restored to uniform rate of 95¢ per MCF unless otherwise ordered by P. U. C.

ILLINOIS

Chicago: (Correction) Co. reports second increase effective June 16, 1920. New rate: M. M. Chge. 1st 4 CCF 3, 5 and 10 lt. meter 60¢, 20 lt. 75¢, 30 lt. $1.00, 45 lt. $1.20, 60 lt. $1.50, 100 lt. $1.75, 150 lt. $2.25, 200 lt. $2.70, 250 lt. $3.00, 300 lt. $3.50, 400 lt. $4.00. Minimum bill for consumers having meters larger than a 10 lt. 20 lt. $1.00, 30 lt. $2.00, 45 lt. $2.50, 60 lt. $3.00, 100 lt. $4.00, 150 lt. $5.00, 200 lt. $6.00, 250 lt. $8.00, 300 lt. $10.00, 400 lt. $12.00. Primary rate over 4 CCF and not over 50 MCF $1.15 per MCF. Secondary rate $1.00 per MCF for gas in excess of 50 MCF. Penalty 10¢ per M. 10 days.

INDIANA

Brazil: (Increase) Co. reports third increase effective July 1, 1921. New rate: 1st 5 MCF $2.25—next 5 MCF $1.85—next 5 MCF $1.65—over 15 MCF $1.45 per M. Penalty 10¢ per M 10 days M. M. Chge. $1.20.

KANSAS

Salina: (Increase) Co. reports second increase effective Nov. 1, 1920. New rate: $2.00 per MCF disc. 5 per cent 10 days. Penalty 10 per cent if not paid in D. P. M. M. Chg. 50¢ per meter per month.

MAINE

Lewiston: (Decrease) Co. reports a voluntary reduction effective Sept. 1, 1921. New rate: 1st 10 MCF $1.70 less 10¢ per M 15 days—next 10 MCF $1.55 net—next 10 MCF $1.45—over 30 MCF $1.30 net per M.

MASSACHUSETTS

Lynn: (Increase) Co. reports fourth increase to $1.50 net per M effective October 10, 1920.

Lynn: (Decrease) Co. reports a voluntary reduction to $1.40 net per M effective August 1, 1921.

Pittsfield: (Decrease) Co. reports decrease of 10¢ per M effective August 1, 1921. New rate: Pittsfield and Dalton $1.80 gross $1.70 net per M. Lenox and Lee $2.00 gross $1.90 net per M.

MICHIGAN

Charlotte: (Increase) Co. reports increase effective April 15, 1921. New rate: $1.95 gross $1.85 net per MCF. Eaton Rapids effective Dec. 15, 1920, $1.95 gross $1.85 net per MCF. Rate in Charlotte readjusted by arbitration from a rate 20¢ per M higher, the present rate being an increase over former fixed rate. Eaton Rapids by P. U. C.

Saginaw: (Increase) Co. reports third increase effective June 1, 1921. New rate: 1st 5 CCF or less 75¢—6 CCF 85¢—7CCF 95¢—8CCF $1.05—9 CCF $1.15—1 MCF $1.25 net rates. Gross rate 2¢ per CCF added if unpaid in discount period.

NEW YORK

Albany: (Decrease) Co. reports a voluntary reduction effective Aug. 20, 1921. New rate: 1st 25 MCF $1.25—next 25 MCF $1.25—over 50 MCF $1.20 per M. M. M. Chge. 75¢.

NORTH CAROLINA

Asheville: (Increase) Power and Light Co. reports increase granted by N. C. Commission effective upon completion of improvements ordered, prior to Jan. 1, 1922. New rate: 1st 10 MCF $2.30—next 10 MCF $2.10—over 20 MCF $2.00 per M, discount 10¢ per M 10 days. Old rate: $1.60 per MCF with same discount.

OHIO

Delphos: (Increase) Co. reports second increase effective Dec. 1, 1920. New rate: 1st 2 CCF or less $1.10—next 10 MCF $1.45—over 10 MCF $1.25 per M. Disc. 10¢ 10 days.

PENNSYLVANIA

Berwick: (Increase) Gas Co. reports old rate: $1.35 gross $1.25 net per MCF. M. M. Chge. 50¢. First increase effective June 18, 1918, to $1.75 gross $1.65 net per MCF. Second increase effective Aug. 18, 1920. New rate: $1.90 net per MCF—S. Chge. 75¢.

Chambersburg: (Increase) Co. reports second increase effective Sept. 1, 1920. New rate 1st 5 MCF $1.90—next 5 MCF $1.80—next 5 MCF $1.70—next 5 MCF $1.60—next 5 MCF $1.50—over 25 MCF $1.40 per M. Disc. 10¢ 15 days. M. M. Chge. 50¢

Easton: (Decrease) Co. reports change effective Mch. 9, 1921. S. Chge. reduced from 35¢ to 20¢. Co. reports a further change effective Aug. 1, 1921—S. Chge. cancelled—new rate $1.50 net per MCF—M. M. Chge. 75¢ per meter.

Slatington: (Increase) Gas Corporation reports increase effective May 1, 1920. New rate: 1st 5 MCF $2.25—next 5 MCF $2.15—over 10 MCF $2.05 per M. Disc. 10¢ per M. M. M. Chge. 75¢. Old rate 40¢ per M less each step. M. M. Chge. same.

VERMONT

Rutland: (Increase) Co. reports fourth increase effective April 1, 1921. New rate: 1st 20 MCF $2.40—next 20 MCF $2.20—next 30 MCF $2.05—over 70 MCF $1.90 per M. M. M. Chge. $1.11, disc. 10 per cent 10 days. P. P. Meters $2.27 per M.

VIRGINIA

Petersburg: (Increase) Co. reports second increase effective April 1, 1921. New rate: 1st 5 MCF $1.85—next 5 MCF $1.75—next 10 MCF $1.65—next 30 MCF $1.55—next 50 MCF $1.45—over 100 MCF $1.25 per M. Disc. 10¢ per M.
Co. reports third increase effective July 1, 1921, adds 25¢ to each above step rate, same discount. M. M. Chge. $1.00.

Lynchburg: (Increase) Traction and Light Co. reports increase effective Aug. 15, 1921. New rate: 1st 10 MCF $1.70—next 10 MCF $1.65—next 10 MCF $1.60—next 30 MCF $1.50—next 40 MCF $1.45—over 100 MCF $1.35 per M. Discount 10¢ per M—M. M. Chge. 65¢ P. P. meter $1.70 net per M. B. t. u. 550. Old rate: $1.30 gross $1.20 net per MCF. P. P. meter $1.20 per M.

Staunton: (Increase) Co. reports increase effective Nov. 15, 1920. New rate: 1st 10 MCF $2.25 next 10 MCF $2.00—over 20 MCF $1.75 per M.

Norfolk: (Decrease) Co. reports following rate changes. Under Oil Clause from June, 1920, to and including February, 1921, $1.70 gross plus 5¢ per MCF. March, 1921, $1.70 gross (Oil Clause excluded) April, May, June and July rate reduced to $1.50 gross per MCF (no. Oil Clause) August 1, 1921. New rate: $1.45 gross per MCF—step down rate and discount unchanged.

WASHINGTON

Bellingham: (Increase) Co. reports second increase effective Aug. 1, 1921. New rate: 1 CCF 90¢—2 CCF $1.05—3 CCF $1.15—4 CCF $1.25—5 CCF $1.40—6 CCF $1.50—7 CCF $1.65—8 CCF $1.75—9 CCF $1.90. 1 MCF $2.00—next 2 MCF $1.90 per M—next 2 MCF $1.75—over 5 MCF $1.70 per M. M. M. Chge. 90¢. All rates net 10 days.

Edwin N. Hurley said before the United States Chamber of Commerce at Atlantic City on April 29, 1921: "Not all companies really understand what service means —a real service—using the word in its broadest sense. Such real service commences at the top of the company and works down and percolates through to the outer edges of the corporation so that all points of contact are guarded and all methods of intercourse are watched and the consumer is considered in a manner which makes him believe he is regarded as an individual with rights and desires which the company recognizes and respects."

QUESTION BOX

ACCOUNTING PROBLEMS

A-16 On page 85 of the 1914 N. C. G. A. Proceedings, the following form is shown, covering cases where a main extention is made, for which the customer pays:

> .....
>
> Dear Sir:
>
> If you will, at your own cost and expense, extend your mains
>
> from ..... to .....
>
> I will pay you the sum of $.....
>
> I make this payment solely that I may have the convenience of the use of gas and for the improvement of my property, and I clearly understand that by such payment I acquire no interest whatever in the pipes which you lay in pursuance of this request.
>
> (Signature) .....
>
> Date .....
>
> Received the above sum of $.....
>
> .....

What account should be credited with the payment made by the customer? Is it a credit to the construction account or a miscellaneous earning?

ANSWERS

Mr. H. C. Davidson, Consolidated Gas Company of N. Y., New York, N. Y.

We do not have this condition in Manhattan. Some of our affiliated companies do have it however, and it was formerly the practice to credit such payments by consumers directly to the street mains account. In recent years the practice has been to set up a separate classification of fixed capital entitled "Construction Contributions," and credit to this account (which amounts to a deduction from fixed capital) all payments as made. The advantage of this method is that the street mains account as shown by the books, represents more correctly the value of the company's mains. I cannot see that the earnings of the company are effected in any way, unless the contributions so collected are known to be in excess of the costs, in which case such excess would become a part of miscellaneous income. I doubt, however, if any company makes it a practice to charge admittedly a profit upon such transactions.

This accounting procedure assumes the reimbursement by the consumers for the company's construction expenditures without refund. In the event of a contract by which the consumer pays for the original construction with the understanding that this contribution be refunded to him upon some percentage of the consumption, then such contribution should be credited to a suspense account to be ultimately wiped out, in which case the contribution is simply a deferred liability on the part of the company.

Mr. W. J. Achelpohl, Illinois Traction System, Peoria, Ill.

As I understand the contract signed by the customer the cost of the improvement would become the property of the company, in which case the cost of same should be charged to Property Account, therefore the amount received for the improvements should be credited to Donation Account and shown on the balance sheet.

If at some later date the amount is refunded it should be charged to Donation Account.

Mr. B. P. Shearon, Northern Indiana Gas and Electric Company, Hammond, Ind.

We have had no cases such as outlined in the inquiry; however, for your information wish to say that the procedure followed by this Company would be to credit "Miscellaneous Earnings" and I might state that I am of the opinion that this would be the general practice of utilities throughout the State.

Mr. Isaac S. Hall, Charles H. Tenney & Company, Boston, Mass.

It is our opinion that such payments should be credited to either Construction or a special reserve account, if the books are to be kept on a cost basis.

The Massachusetts Commission takes the view that the Investment Account shall be credited with all payments of this nature.

Mr. W. R. Putnam, V. P. & Gen. Mgr., Idaho Power Co., Boise, Idaho

Please bear in mind that the contribution of customer at the time extension is made to serve customer is in the nature of an earning on the extension and is not a contribution to capital account.

While it is true that some regulatory commissions have taken opposite views because of inadequate presentation or consideration of the subject, it is most important that all utilities appreciate that the economics of the situation can only call for the above conclusion, since any other conclusion immediately places a burden on other customers for the service rendered the contributing customer.

Such being the case, the contribution should be set up as an advance payment for service and should be pro rated over a comparatively small number of years as an earning on this service over and above the actual earnings contributed by the customer, or customers, monthly in accordance with the bills rendered,

Geo. R. Horning—State Representative Accounting Section, Utah

This Company has no construction of gas mains, under the conditions specified and no method of accounting for such construction has been considered.

My impression is that in most cases of the kind the consumer is required to pay the cost of extention without acquiring any interest in it, only because the business to be attached is not and will not be for a long time sufficient to be profitable. While the Utility comes into possession of the main extension it at the same time assumes liability, in that loss from leakage must be sustained, the main kept in repair and at some time replaced, without earnings from the sale of gas assured to do this. To be in a position to replace this main when necessary, depreciation must be written on it along with all other depreciable property and the cost should remain in investment account.

Assuming that the consumer pays cost and no more, his payment will equal depreciation only, and it appears his payment should be credited to Miscellaneous Earnings.

The presence of sulphur dioxide could be readily be determined by drawing a sample of the air from the recirculation system, preferably at the outlet of the purifier, undergoing revivification, and passing it through two or three wash bottles containing a solution of sodium carbonate with a few drops of bromine added, thence through a test meter. The sulphur dioxide would be absorbed and oxidized to sulphuric acid and could then be determined by acidifying and precipitation with barium cloride in the usual way. This would serve either as a qualitative or as a quantative test.

Mr. Ewald Haase, Milwaukee Gas Light Company, Milwaukee, Wis.

The practice in Wisconsin, as to requiring costumers to pay for extensions, varies in different companies. In our own Company the contribution by the customer is first considered as a deposit, which is refundable under certain conditions, and within a limit of four years' time. We make extensions at our expense at the rate of one hundred feet for each new consumer. When the length of the extension exceeds that rate the customer is required to make a deposit at the rate of $1.50 per foot for the length in excess of 100 feet for each consumer to be reached. If at any time within four years the additional customers are connected to this extension, the depositer receives for each customer so taken on, a refund of an amount equivalent to 100 feet at rate he paid for, or $150, or until the amount he deposited is refunded, but no refunds are made after four years from the date of the contract.

When amounts are forfeited by the lapse of four years before taking on the required number of customers, the Commission requires the amount so forfeited to be credited to construction account. It will not permit the credit to miscellaneous earnings. The Commission is considering establishing a rule that amounts permanently contributed by customers for construction, be set up under an account entitled "contributions by customers." In other words, they are considering following the New Standard Classification. However, this rule has not been promulgated and we are still adhering to the practice heretofore required by the Commission, of crediting the amount to plant.

Mr C. D. Fullerton, Portland Gas Light Co., Portland, Me.

The procedure followed by this company, in regard to main extensions for the past five years, has been as follows:

The customer applying for an extension of main guarantees for a period of five years that the gas used annually on such extension shall amount to one thousand c. f. per ft. or that he will annually pay 20¢ for each thousand ft. by which the gas so consumed falls below the amount of one thousand c. f. per ft.

In case the gas used on such an extension falls below the amount guaranteed we credit the difference when billed to Miscellaneous Operating Revenue.

GENERAL PROBLEMS

G-44 We have been experiencing some corrosion of metals in connection with our purifying plant for taking care of coke oven gas. We are wondering if any of our other members have had similar experiences and, if so, what has been done to remedy them. Our experience is about as follows:

Our purifying plant consists of five purifiers, rectangular, erected in a battery and built of steel plates. The gas is handled through 20 inch cast iron connections using ordinary 20 inch gate valves to control the flow. It is our practice to revive in place one purifier per day circulating the air through this purifier by means of a small centrifugal fan connected through a 10 inch light steel riveted pipe and 10 inch cast iron valves. The gas comes from the coke oven plant, erected by the Koppers Company, and is washed and scrubbed. Sometimes the light oils are removed by scrubbing and at other times they are not, depending upon the market. The purifying plant is approximately five miles from the coke oven plant connected through a 16 inch cast iron main. These purifiers were put in service in January, 1918.

The first trouble we experienced was with the impellers on the fan of the reviving system. These failed within three months. It was necessary to install additional fans. We still have trouble with the impellers. The next thing that was noted was corrosion in the interior of the steel boxes. This was somewhat alarming. We found that by coating the steel with an asphalt and tar preparation of a plastic nature, advertised in gas journals, we were able to overcome this and the interiors of all the purifiers have been coated. The next difficulty noticed was the rapid deterioration of the thermometer stems of brass and steel which

projected down in the piping. This year it has been necessary to renew all the 10 inch piping in the reviving system and it was found that the castiron seats of all valves were corroded to such an extent that the valves leaked dangerously. The valves were removed one at a time and the seats surfaced off in the machine shop. Apparently the iron had been largely removed from the surface leaving the graphite. As far as our investigation showed there is no deterioration of the pipe which is covered with condensation and seems to be in good condition. We have not noted any trouble in the wet meters, which are located at the outlet of the purifiers, nor has any trouble been noted in the holders, mains or meters. Some deposits have been found in mains but not more than under old conditions. An analysis of these deposits shows a trace of cyanogen and a trace of ammonia, the balance being composed of iron oxide and tarry condensation.

In 1919 we made some determinations on our oxide for potassium ferricyanide to see if it was salable. Several batches ran from seven to eight per cent but no market could be found and this matter was dropped.

ANSWERS

Mr. Gray J. Houston, Henry L. Doherty & Company, New York, N. Y.

I assume that the boxes are connected to the discharge side of the fan. From the wording of the inquiry I am led to believe that the gas itself is not the cause of the trouble but that it is solely a feature of the reviving system, and further that the corrosive agent enters the intake of the fan. This can be determined by analyzing the intake air for impurities while the fan is in operation. Possibly these impurities only reach the fan under certain conditions, therefore, a number of tests may be necessary to prove this point conclusively.

Without knowing the local conditions it appears possible that fumes originatng in some other part of the plant, or in a neighboring industry, are carried to the fan. I think, however, a more reasonable theory would be that some of the exhaust products from the box that is being revived find their way to the fan. The heat generated in the reviving process undoubtedly oxidizes some of the sulphur present to SO_2 and I believe, due to the catalytic effect of the purifying material, there is a possibility of a little SO_3 being formed. With the water present these gases would form sulphurous and sulphuric acids.

If my theory should prove correct, the natural correction would be to carry the fan intake to pure air or divert the foul air from it. A temporary remedy would be to occasionally spray oil into the fan while it is in operation, thus coating the impeller blades, piping and valve seats.

Mr. W. A. Dunkley, Bureau of Mines, Urbana, Ill.

I have never had any experience of like nature, in actual operation practice, but I believe I can see a possible explanation of the conditions observed in that plant.

If I understand the situation correctly, the corrosion has taken place chiefly in the air circulating system for reviving the oxide in the purifiers and there has been no serious corrosion in the gas system proper. Though the actual revivifying system is not described in complete detail, I assume that air is circulated through the box undergoing revivification and that a certain percentage of fresh air is continuously drawn into the system through a suitable valve and a portion of the air which has been through the box is continuously expelled from the system through another valve.

If the above describes the lay-out of the system, it seems likely to me that the revivification in the box proceeds with such rapidity that local heating may be taking place in some parts of the box resulting in the production of sulphur dioxide from some of the sulphur set free during the process. Sulphur dioxide. if formed, together with moisture which would doubtless be present, would form sulphurous acid which would have a corrosive action on all the metals with which it came in contact.

G-45 A gas company having a daily make of 3,500,000 cubic feet has a two lift relief holder 80 ft. in diameter, 200,000 cubic ft. capacity. Pressure thrown by inner section of relief holder 8 in., pressure thrown by both sections of relief holder 12 in. What is the reduction in make due to the pressure of this holder compared with a relief holder that throws a pressure of 4 ft. inner section and 6 ft. for both sections?

Circumstances peculiar to the business of any gas company might make it advisable and right to handle the matter in a different way.

Employment Bureau

SERVICES OFFERED

WANTED—Position as Industrial Power and Fuel Engineer. Technical engineer and salesman of excellent qualifications for industrial power and fuel sales. Now employed $3000. Address—A. G. A.
Key No. 111

WANTED—Position as executive in a local office of a gas or a combination gas and electric company. Have had practical experience in all branches of commercial utility work. Have been successful in dealing with the public and promoting good will of utility companies. Educated in commercial and accounting methods as compiled by the N. C. G. A. and N. E. L. A. Well acquainted in office routine and very exact on details and execution of same. Address A. G. A.
Key No. 114

WANTED—A position with a gas appliance company having need for an all around man experienced in development and selling. Can furnish best of references. Address—A. G. A.
Key No. 116

POSITION WANTED—As General Superintendent or Engineer of good-sized company, by well known technical graduate of 18 years connection with the gas business. Experienced in every branch of the industry and has made good. Has been superintendent of one large company and manager of other smaller ones. Has himself laid mains, made gas, set ranges, purchased and sold appliances, etc., so that he knows the difficulties and the things to avoid. Noted for his ability to handle men. Well read and up-to-date in every particular. Address—A. G. A.
Key No. 117

WANTED—Position as manager in medium size town or as gas engineer by technical man with 9 years experience in all branches. Both syndicate and private operation. Has shown exceptionally good results. Address A. G. A.
Key No. 118

WANTED—Position as manager or superintendent with gas company in North Eastern States. Eight years experience in both coal and water gas. Married. Good references. Address A. G. A.
Key No. 119

WANTED—Position as General Manager of Gas or Gas and Electric Company in city of size or as assistant to chief executive in very large company. Operation, management, finance, rates and capitalization by Public Utility engineer of my broad experience. Address A. G. A.
Key No. 120.

WANTED—Position as assistant to engineer of small syndicate of gas and electric companies. Have had four years experience in engineering department of a holding corporation. Address A. G. A.
Key No. 121

WANTED—Position where nearly twenty years intensive study of carbonization, works operation, by-product recovery, and all details of apparatus and machinery peculiar to the manufacturing end of the business can be utilized to mutual advantage. Address A. G. A.
Key No. 122

WANTED—Position as Manager of a gas property, by a man who left such a position two months ago to become the Manager of a manufacturing company. Is 34 years of age; technical graduate, and experienced in all branches of the gas business Reports and data available from past experience; also the best of reference. Address A. G. A.
Key No. 123

EXECUTIVE AVAILABLE—An executive who has had some years experience in construction, operation and management of gas, electric power and traction properties will soon be open for engagement. Is specially competent in management of such properties in all branches including fare, rate, franchise, and valuation proceedings, labor matters and public relation. Will show record of successful work for fifteen years back with proofs to anyone interested. Address A. G. A.
Key No. 124

GAS APPLIANCE SALESMAN—Especially trained in water and house heating; 15 years' experience; desires selling position, either road or local, with aggressive appliance manufacturer or gas company. Will furnish best selling reference. Drawing account against commission. Address A. G. A.
Key No. 125

WANTED—Position as salesman or sales manager with reliable gas or electric appliance manufacturer preferred. Address A. G. A.
Key No. 126

WANTED—Position as Superintendent of small company, in town of about 100,000 population or as Assistant Superintendent of some large holding company. New England or Central States preferred. Married, middle age, at present employed and can furnish good reference. Address A. G. A.
Key No. 128

WANTED—Position as General Superintendent or Superintendent of Manufacture, coal or water gas; life experience in same, at present superintendent of small plant; A1 references. Salary $200 per month. Address A. G. A.
Key No. 129

WANTED—Position as Manager of property in city of 20,000-25,000. Thorough knowledge of all departments, gained from twenty years' experience. At present employed, but desirous of change. Ample references furnished as to character and ability. Address A. G. A.
Key No. 130

Wanted—Position as Superintendent or Assistant Superintendent in medium sized W. G. Plant in vicinity of New York, by American, 26 years of age. Technical education—5 years in Gas Business. At present Superintendent of plant in Western City. Change desired for betterment and desire to return to East. Address A. G. A.
Key No.133

Wanted—Position by a man of large general experience in gas business who has made a special study of sales promotion problems, and who would prove valuable as an assistant to a busy executive in any department. Address A. G. A.
Key No. 134

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST, 24, 1912, of American Gas Association Monthly, published monthly at Easton, Pa., for October 1, 1921.

STATE OF NEW YORK } ss:
COUNTY OF NEW YORK }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Louis Stotz who, having been duly sworn according to law, deposes and says that he is the Business Manager of the American Gas Association MONTHLY, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, American Gas Association, Inc., 130 East 15th St., New York.

Editor, none.

Managing Editor, none.

Business Manager, Louis Stotz.

2. That the owners are: (Give names and addresses of individual owners, or if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock.)

American Gas Association, Inc. No stock issued.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

There are none.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner and that this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is not required.

(This information is required from daily publications only.)

(Signed) LOUIS STOTZ, *Business Manager.*

Sworn to and subscribed before me this 22d day of September, 1921.

[SEAL] (Signed F. C. GORDON.

(My Commission expires March 30, 1923.)

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